HANDBOUND
AT THE

UNIVERSITY OF
TORONTO PRESS

Digitized by the Internet Archive
in 2007 with funding from
Microsoft Corporation

http://www.archive.org/details/mindreview12edinuoft

67 10149 I

MIND

A QUARTERLY REVIEW

OF

PSYCHOLOGY AND PHILOSOPHY.

THE ABERDEEN UNIVERSITY PRESS:

JOHN THOMSON AND J. F. THOMSON, M.A.

MIND

A QUARTERLY REVIEW

OF

PSYCHOLOGY AND PHILOSOPHY.

EDITED BY

GEORGE CROOM ROBERTSON

PROFESSOR IN UNIVERSITY COLLEGE, LONDON.

VOL. XII.—1887.

WILLIAMS AND NORGATE,

14 HENRIETTA STREET, COVENT GARDEN, LONDON;

AND 20 SOUTH FREDERICK STREET, EDINBURGH.

1887.

8934
11/6/90
c

B
1
M65
v.12

CONTENTS OF VOLUME XII.

ARTICLES.

	PAGE
BAIN, A.—On 'Association'-Controversies	161
BRADLEY, F. H.—Association and Thought	354
DAVIDSON, W. L.—The Logic of Classification	233
DEWEY, J.—Knowledge as Idealisation	382
GURNEY, E.—Further Problems of Hypnotism	212, 397
JAMES, W.—The Perception of Space	1, 183, 321, 516
MAUDSLEY, H.—The Physical Conditions of Consciousness	489
RIGG, J. M.—The Place of Hypothesis in Experimental Science	549
SIDGWICK, H.—"Idiopsychological Ethics"	31
WARD, J.—Psychological Principles (iii.)	45
WINTERTON, F.—Philosophy among the Jesuits	254

RESEARCH.

CATTELL, J. McK.—Experiments on the Association of Ideas	68
GALTON, F.—Supplementary Notes on "Prehension" in Idiots	79
JACOBS, J.—Experiments on "Prehension"	75

DISCUSSION.

BAIN, A.—On Feeling as Indifference	576
BRADLEY, F. H.—Why do we remember forwards and not backwards?	579
DEWEY, J.—"Illusory Psychology"	83
HODGSON, S. H.—Subject and Object in Psychology	423
MACKENZIE, W. L.—Recent Discussion on the Muscular Sense	429
MORGAN, C. Ll.—The Generalisations of Science	88
TOWRY, M. H.—On the Doctrine of Natural Kinds	434
WARD, J.—Mr. F. H. Bradley's Analysis of Mind	564

CRITICAL NOTICES.

ADAMSON, R.—J. Volkelt, *Erfahrung und Denken*	122
ALLEN, G.—M. Guyau, *Les Problèmes de l'Esthétique contemporaine*	119
CATTELL, J. McK.—G. T. Ladd, *Elements of Physiological Psychology*	583
EDITOR—J. Dewey, *Psychology*	439
MONCK, W. H. S.—Anon., *Scottish Metaphysics Reconstructed*	447
MORGAN, C. Ll.—E. Gurney and others, *Phantasms of the Living*	275
RASHDALL, H.—J. M. Wilson, T. Fowler, *The Principles of Morals*	589
RITCHIE, D. G.—B. Bosanquet, *The Introduction to Hegel's Philosophy of Fine Art* (tr.)	596
SETH, A.—T. H. Green, *Philosophical Works*, ii.	93
STOUT, G. F.—W. Knight, *Hume*	443
SULLY, J.—J. Delboeuf, *Le Sommeil et les Rêves*	115
„ B. Perez, *La Psychologie de l'Enfant*	282
„ H. Höffding, *Psychologie in Umrissen &c.*	606
WHITTAKER, T.—C. Renouvier, *Esquisse d'une Classification systématique des Doctrines philosophiques*	100
„ W. Wundt, *Ethik*	285

PAGE

WHITTAKER, T.—M. Carrière, *Die philosophische Weltanschauung der Reformationszeit* (2te Aufl.) 451
„ J. Delboeuf, *La Matière brute et la Matière vivante* 601

NEW BOOKS.

Alexander, A.—*Some Problems of Philosophy* 469
Ardigò, R.—*Opere Filosofiche*, iv. 626
Arréat, L.—*Journal d'un Philosophe* 623
Bain, A.—*English Composition and Rhetoric*, i. (new ed.) . . . 298
„ *On Teaching English* 298
Bastian, A.—*In Sachen des Spiritismus &c.* 308
Begg, W. P.—*The Development of Taste* 136
Bergmann, J.—*Ueber das Schöne* 629
Best, G. P.—*Morality and Utility* 617
Bigg, C.—*The Christian Platonists of Alexandria* 301
Binet, A., and Féré, C.—*Le Magnétisme Animal* 144
Biran, M. de—*Science et Psychologie* (ed. A. Bertrand) . . . 625
Bithell, R.—*Agnostic Problems* 616
Bölsche, W.—*Die naturwissenschaftlichen Grundlagen der Poesie* . 478
Bonatelli, F.—*Discussioni gnoseologiche* 305
Bordier, A.—*La Vie des Sociétés* 626
Bouillier, F.—*Nouvellest Études familières &c.* 473
Brewster, H. B.—*The Theories of Anarchy and of Law* . . . 467
Burnouf, E.—*La Vie et la Pensée* 302
Butler, S.—*Luck, or Cunning?* 294
Carneri, B.—*Entwicklung und Glückseligkeit* 147
Carrière, M.—*Die phil. Weltanschauung der Reformationszeit* (2te Aufl.) 309
Carroll, L.—*The Game of Logic* 613
Cesca, G.—*La Teorica della Conoscenza nella Filosofia Greca* . . 628
Cope, E. D.—*The Origin of the Fittest* 294
Cunningham, W.—*S. Austin and his Place in Christian Thought* . 136
Darmesteter, A.—*The Life of Words* 134
Davidson, W. L.—*Leading and Important English Words* . . . 135
Delboeuf, J.—*Une Visite à la Salpêtrière* 304
Desjardins, A.—*Les Sentiments Moraux au 16e Siècle* . . . 472
Dewey, J.—*Psychology* 301
Druskowitz, H.—*Wie ist Verantwortung und Zurechnung möglich?* . 150
Edgeworth, F. Y.—*Metretike* 466
Ende, U. van—*Histoire Naturelle de la Croyance*, i. 623
Ercole, P. d'—*Notizia di Pietro Ceretti* 146
Eucken, R.—*Zur Würdigung Comte's u. des Positivismus* . . . 477
Featherman, A.—*Social History of the Races of Mankind*, ii. . . 295
Féré, C.—*Sensation et Mouvement* 471
Ferraz, M.—*Spiritualisme et Libéralisme* 472
Ferrier, D.—*The Functions of the Brain* (2nd ed.) 132
Finck, H. T.—*Romantic Love and Personal Beauty* 611
Fischer, K.—*History of Modern Philosophy; Descartes and his School* (tr. J. P. Gordy, ed. N. Porter) 464
Fitzgerald, P. F.—*On the Principle of Sufficient Reason* . . . 614
Fleming, W.—*Vocabulary of Philosophy* (4th ed., H. Calderwood) . 300
Fonsegrive, G. L.—*Essai sur le Libre Arbitre* 621
Fowler, T.—*The Principles of Morals*, ii. 466
Frith, I.—*Life of Giordano Bruno* 296
Fullerton, G. S.—*The Conception of the Infinite &c.* 468
Gass, W.—*Geschichte der christlichen Ethik* 306, 474

PAGE
Goldhammer, L.—*Die Psychologie Mendelssohn's* 305
Gurney, E., and others—*Phantasms of the Living* 135
Guyau, M.—*L'Irréligion de l'Avenir* 143
Haldane, R. B.—*Life of Adam Smith* 618
Hartmann, E. v.—*Die deutsche Æsthetik seit Kant*, i. 308
Hartmann, F.—*Paracelsus* 140
Hegel, G. W. F.—*Introduction to Philosophy of Fine Art* (tr. B. Bosanquet) 134
„ *Briefe von und an* (ed. K. Hegel) 474
Herzen, A.—*Les Conditions physiques de la Conscience* 145
Hinton, C. H.—*Scientific Romances*, v. 139
Hodgson, S. H.—*The Re-organisation of Philosophy* 138
Höffding, H.—*Psychologie in Umrissen* (tr. F. Bendixen) 476
Janet, P.—*Victor Cousin et son Œuvre* 141
„ *Histoire de la Science Politique* (3me éd.) 142
Jerusalem, W.—*Zur Reform des Unterrichtes in der phil. Propädeutik* 151
Jordan, F.—*Anatomy and Physiology in Character* 298
Kant, I.—*The Philosophy of Law* (tr. W. Hastie) 301
Keibel, M.—*Werth und Ursprung der philosophischen Transcendenz* . 149
Keynes, J. N.—*Studies and Exercises in Formal Logic* (2nd ed.) . 614
Knight, W.—*Hume* 135
Koeber, R.—*Ist E. Haeckel Materialist?* 479
Köstlin, K.—*Geschichte der Ethik*, i., 1 632
Krause, K. C. F.—*Grundriss der Gesch. der Phil.* (ed. P. Hohlfeld, A. Wünsche) 309
Kröner, E.—*Das körperliche Gefühl* 308
L., B. L.—*Matter and Energy* 616
Labriola, A.—*I Problemi della Filosofia della Storia* 628
Ladd, G. T.—*Elements of Physiological Psychology* 465
Lange, L.—*Die geschichtliche Entwickelung des Bewegungsbegriffes* . 151
Lanzky, P.—*Abendröte* 630
Letourneau, C.—*L'Évolution de la Morale* 140
Lockhart, W.—*Life of Antonio Rosmini Serbati* 134, 297
Lotze, H.—*Kleine Schriften*, ii. 149
„ *Outlines of Psychology &c.* (tr. and ed. G. T. Ladd) . 469
M'Cosh, J.—*Realistic Philosophy* 466
„ *The Motive Powers* 612
Mach, F. J.—*Die Willensfreiheit des Menschen* 631
M'Lennan, J. F.—*Studies in Ancient History* (new ed.) . . . 133
M'Taggart, W. B.—*Absolute Relativism* 618
Martin, A.—*L'Éducation du Caractère* 624
Martineau, J.—*Types of Ethical Theory* (2nd ed.) 133
Masaryk, T. G.—*Versuch einer concreten Logik* 306
Maude, J. E.—*The Foundations of Ethics* (ed. W. James) . . . 470
Meyer, J. B.—*Probleme der Lebensweisheit* (2te Aufl.) . . . 634
Minchin, G. M.—*Naturae Veritas* 467
Morison, J. C.—*The Service of Man* 297
Morselli, E.—*La Filosofia Monistica in Italia* 474
Müller, F. A.—*Das Problem der Continuität &c.* 307
Müller, F. M.—*The Science of Thought* 299
Neiglick, H.—*Zur Psychophysik des Lichtsinnes* 635
Nourrisson—*Philosophies de la Nature* 623
Paulhan, F.—*Les Phénomènes Affectifs &c.* 303
Payne, W. H.—*Contributions to the Science of Education* . . . 137
Pfleiderer, E.—*Die Philosophie des Heraklit von Ephesus &c.* . . 305
Pfleiderer, O.—*Philosophy of Religion*, ii. (tr. A. Menzies) . . 616

PAGE
Rabier, E.—*Leçons de Philosophie*, ii., *Logique* 145
Rabus, L.—*Grundriss der Geschichte der Philosophie* 477
Reichel, E.—*Wer schrieb das "Novum Organon"?* 477
Richet, C.—*Essai de Psychologie générale* 619
Riehl, A.—*Der philosophische Kriticismus &c.*, ii., 2 476
Ritter, H., and Preller, L.—*Historia Philosophiae Graecae*, i. (7th ed., ed. Fr. Schultess) 310
Roberty, E. de—*L'ancienne et la nouvelle Philosophie* 620
Saltus, E.—*The Anatomy of Negation* 139
Sarlo, F. de—*Studi sul Darwinismo* and *I Sogni* 627
Schubert-Soldern, R. v.—*Grundlagen zu einer Ethik* 305
„ *Reproduction, Gefühl und Wille* . . 631
Schwegler, A.—*Gesch. der Phil. im Umriss* (14te Aufl., ed. R. Koeber) 476
Sigwart, C.—*Vorfragen der Ethik* 477
Spencer, H.—*The Factors of Organic Evolution* 293
Spir, A.—*Esquisses de Philosophie critique* (tr.) 471
Stapley, A. M.—*The Mechanism of Nature* 139
Stein, K. H. v.—*Die Entstehung der neueren Ästhetik* . . . 152
Stewart, A.—*Our Temperaments* 131
Stricker, S.—*Ueber die wahren Ursachen* 633
Teichmüller, G.—*Religionsphilosophie* 306
Thompson, D. G.—*The Problem of Evil* 465
Velzen, H. T. van—*Ueber die Geistesfreiheit vulgo Willensfreiheit* . 152
Vogt, J. G.—*Die Geistesthätigkeit des Menschen &c.* 634
Voltz, H.—*Die Ethik als Wissenschaft* 149
Wallis, H. W.—*The Cosmology of the Rigveda* 615
Wasserschleben, F. V. v.—*Die drei metaphysischen Fragen &c.* . . 629
Weckesser, A.—*Zur Lehre vom Wesen des Gewissens* 150
Weir, A.—*The Historical Basis of Modern Europe* 301
Werner, J.—*Hegel's Offenbarungsbegriff* 634
Werner, K.—*Die italienische Philosophie des XIXten Jahrhunderts* v. 307
Wundt, W.—*Ethik* 148
„ *Zur Moral der literarischen Kritik* 478
Zeller, E.—*Friedrich der Grosse als Philosoph* 150
Ziegler, T.—*Geschichte der Ethik der Griechen u. Römer* . . . 146
„ *Geschichte der christlichen Ethik* 146
A Dictionary of Philosophy in the Words of Philosophers (ed. J. R. Thomson) 610
Proceedings of the Society for Psychical Research, Part xi. 618
Scottish Metaphysics Reconstructed 298

NOTES AND CORRESPONDENCE.

Bain, A.—On Mr. Ward's "Psychological Principles (iii.)" . . . 311
Bradley, F. H.—On a feature of Active Attention 314
Edgeworth, F. Y.—The Method of Measuring Probability and Utility 484
Editor—*The Quarterly Review* on Hobbes 480
„ A remarkable case of Amnesia 636
Hodgson, S. H.—"Illusory Psychology."—A Rejoinder 314
Monck, W. H. S.—Mill's doctrine of Natural Kinds 637
Myers, F. W. H.—On a case of alleged Hypnotic Hyperacuity of Vision 154
Stewart, J. A.—Richard Shute 157

MISCELLANEOUS 158, 318, 485, 639

No. 45.] [JANUARY, 1887.

MIND

A QUARTERLY REVIEW

OF

PSYCHOLOGY AND PHILOSOPHY.

I.—THE PERCEPTION OF SPACE. (I.)

By Professor WILLIAM JAMES.

1. *The Extensive Quality.*

IN the sensations of hearing, touch, sight and pain we are accustomed to distinguish from among the other elements the element of voluminousness. We call the reverberations of a thunderstorm more voluminous than the squeaking of a slate pencil; the entrance into a warm bath gives our skin a more massive feeling than the prick of a pin; a little neuralgic pain, fine as a cobweb, in the face, seems less extensive than the heavy soreness of a boil or the vast discomfort of a colic or a lumbago; and a solitary star smaller than the noonday sky. In the sensation of vertigo, dizziness or subjective motion, which recent investigation has proved to be connected with stimulation of the semi-circular canals of the ear, the spatial character is very prominent. Whether the "muscular sense" directly yields us knowledge of space is still a matter of litigation among psychologists. Whilst some go so far as to ascribe our entire cognition of extension to its exclusive aid, others deny to it all extended quality whatever. Under these circumstances we shall better adjourn its consideration; admitting however that it seems at first sight as if we felt something decidedly more voluminous

when we contract our thigh muscles than when we twitch an eyelid or some small muscle in the face. It seems moreover as if this difference were not wholly explained by traction on different amounts of skin and joint.

In the sensations of smell and taste this element of varying vastness seems less prominent but not altogether absent. Some tastes and smells appear less extensive than complex flavours, like that of roast meat or plum pudding on the one hand, or heavy odours like musk or tuberose on the other. The epithet *sharp* given to the acid class would seem to show that to the popular mind there is something narrow and, as it were, streaky, in the impression they make, other flavours and odours being bigger and rounder.

The sensations derived from the inward organs are also distinctly more or less voluminous. Repletion and emptiness, suffocation, palpitation, headache, are examples of this, and certainly not less spatial is the consciousness we have of our general bodily condition in nausea, fever, heavy drowsiness and fatigue. Our entire cubic content seems then sensibly manifest to us as such, and feels much larger than any local pulsation, pressure or discomfort. Skin and retina are, however, the organs in which the space-element plays the most active part. Not only does the maximal vastness yielded by the retina surpass that yielded by any other organ, but the intricacy with which our attention can subdivide this vastness and perceive it to be composed of lesser portions simultaneously coexisting alongside of each other, is without a parallel elsewhere. The ear gives a greater vastness than the skin, but is considerably less able to subdivide it.

Now my first thesis is, that this element, discernible in each and every sensation, though more developed in some than in others, is the original *sensation of space*, out of which all the exact knowledge about space that we afterwards come to have is woven by processes of discrimination, association and selection. Extensiveness, on this view, becomes an element in each sensation just as intensity is. The latter everyone will admit to be a distinguishable though not separable ingredient of the sensible quality. In like manner extensiveness, being an entirely peculiar kind of feeling indescribable except in terms of itself, and inseparable in actual experience from some sensational quality which it must accompany, can itself receive no other name than that of *sensational element*.

It must now be noted that the vastness hitherto spoken of is as great in one direction as in another. Its dimensions are so vague that in it there is no question as yet of surface

as opposed to depth ; ' volume ' being the best short name for the sensation in question. Sensations of different orders are roughly comparable, *inter se*, with respect to their volumes. This shows that the spatial quality in each is identical wherever found, for different qualitative elements, *e.g.*, warmth and odour, are incommensurate. Persons born blind are reported surprised at the largeness with which objects appear to them when their sight is restored. Franz says of his patient cured of cataract : " He saw everything much larger than he had supposed from the idea obtained by his sense of touch. Moving, and especially living, objects appeared very large." Loud sounds have a certain enormousness of feeling. It is impossible to conceive of the explosion of a cannon as filling a small space. In general, sounds seem to occupy all the room between us and their source ; and in the case of certain ones, the cricket's song, the whistling of the wind, the roaring of the surf, or a distant railway train, to have no definite starting point.

In the sphere of vision we have facts of the same order. " Glowing " bodies, as Hering says, give us a perception " which seems *roomy (raumhaft)* in comparison with that of strictly surface colour. A glowing iron looks luminous through and through, and so does a flame." [1] A luminous fog, a band of sunshine, affect us in the same way. As Hering urges :—

" We must distinguish *roomy* from superficial, as well as distinctly from indistinctly bounded, sensations. The dark which with closed eyes one sees before one is for example a roomy sensation. We do not see a black surface like a wall in front of us, but a space filled with darkness, and even when we succeed in seeing this darkness as terminated by a black wall there still remains in front of this wall the dark space. The same thing happens when we find ourselves with open eyes in an absolutely dark room. This sensation of darkness is also vaguely bounded. An example of a distinctly bounded roomy sensation is that of a clear and coloured fluid seen in a glass ; the yellow of the wine is seen not only on the bounding surface of the glass ; the yellow sensation fills the whole interior of the glass. By day the so-called empty space between us and objects seen appears very different from what it is by night. The increasing darkness settles not only upon the things but also *between* us and the things, so as at last to cover them completely and fill the space alone. If I look into a dark box I find it *filled* with darkness, and this is seen not merely as the dark-coloured sides or walls of the box. A shady corner in an otherwise well-lighted room is full of a darkness which is not only *on* the walls and floor but *between* them in the space they include. Every sensation is there where I experience it, and if I have it at once at every point of a certain roomy space, it is then a voluminous sensation. A cube of transparent green glass gives us a spatial sensation ; an opaque cube painted green, on the contrary, only sensations of surface." [2]

[1] Hermann's *Handb. d. Physiol*, Bd. iii. 1, s. 575. [2] *Ibid.*, s. 572.

There are certain quasi-motor sensations in the head when we change the direction of the attention, which equally seem to involve three dimensions. If with closed eyes we think of the top of the house and then of the cellar, of the distance in front of us and then of that behind us, of space far to the right and then far to the left, we have something far stronger than an idea,—an actual feeling, namely, as if something in the head moved into another direction. Fechner was, I believe, the first to publish any remarks on these feelings. He writes as follows :—

"When we transfer the attention from objects of one sense to those of another we have an indescribable feeling (though at the same time one perfectly determinate and reproducible at pleasure) of altered direction, or differently localised tension (*Spannung*). We feel a strain forward in the eyes, one directed sideways in the ears, increasing with the degree of our attention, and changing according as we look at an object carefully, or listen to something attentively ; wherefore we speak of *straining the attention*. The difference is most plainly felt when the attention vibrates rapidly between eye and ear. This feeling localises itself with most decided difference in regard to the various sense-organs according as we wish to discriminate a thing delicately by touch, taste or smell.

"But now I have, when I try to vividly recall a picture of memory or fancy, a feeling perfectly analogous to that which I experience when I seek to grasp a thing keenly by eye or ear ; and this analogous feeling is very differently localised. While in sharpest possible attention to real objects (as well as to after-images) the strain is plainly forwards, and, when the attention changes from one sense to another, only alters its direction between the sense-organs, leaving the rest of the head free from strain, the case is different in memory or fancy ; for here the feeling withdraws entirely from the external sense-organs, and seems rather to take refuge in that part of the head which the brain fills. If I wish, for example, to recall a place or person it will arise before me with vividness, not according as I strain my attention forwards, but rather in proportion as I, so to speak, retract it backwards." [1]

It appears probable that the feelings Fechner describes are in great part constituted by imaginary semi-circular canal sensations.[2] These undoubtedly convey the most delicate perception of change in direction ; and when, as here, the changes are not perceived as taking place in the external world, they occupy a vague internal space located within the head.[3]

[1] *Elemente der Psychophysik*, ii. 475-6.

[2] See Foster's *Text-book of Physiology*, bk. iii., c. 6, § 2.

[3] Fechner, who was ignorant of the but lately discovered function of the semi-circular canals, gives a different explanation of the organic seat of these feelings. They are probably highly composite. With me, actual movements in the eyes play a considerable part in them, though I am wholly unconscious of the peculiar feelings in the scalp which Fechner goes on to describe thus : "The feeling of strained attention in the different sense-organs seems to be only a muscular one produced in using these

In the skin itself there is a vague form of projection into the third dimension to which Hering has called attention.[1]

"Heat is not felt only against the cutaneous surface, but when communicated through the air may appear extending more or less out from the surface into the third dimension of surrounding space. . . . We can determine in the dark the place of a radiant body by moving the hand to and fro, and attending to the fluctuation of our feeling of warmth. The feeling itself, however, is not projected fully into the spot at which we localise the hot body, but always remains in the neighbourhood of the hand."

The interior of one's mouth-cavity feels larger when explored by the tongue than when looked at. The crater of a newly-extracted tooth, and the movements of a loose tooth in its socket, feel quite monstrous. A midge buzzing against the drum of the ear will often seem as big as a butterfly. The spatial sensibility of the tympanic membrane has hitherto been very little studied, though the subject will well repay much trouble. If we approach it by introducing into the outer ear some small object like the tip of a rolled-up tissue paper lamplighter, or the end of a wooden toothpick made soft between the teeth, we are surprised at the large radiating sensation which its presence gives us, and at the sense of clearness and openness which comes when it is removed. It is immaterial to inquire whether the far-reaching sensation here be due to actual irradiation upon distant nerves or not. We are considering now, not the objective causes of the spatial feeling, but its subjective varieties, and the experiment shows that the same object gives more of it to the inner than to the outer cuticle of the ear. The tympanic membrane is furthermore able to render sensible differences in the pressure of the external atmosphere, too slight to be felt as noise. If the reader will sit with closed eyes and let a friend approximate some solid

various organs by setting in motion, by a sort of reflex action, the set of muscles which belong to them. One can ask, then, with what particular muscular contraction the sense of strained attention in the effort to recall something is associated? On this question my own feeling gives me a decided answer; it comes to me distinctly not as a sensation of tension in the inside of the head, but as a feeling of strain and contraction in the scalp, with a pressure from outwards in over the whole cranium, undoubtedly caused by a contraction of the muscles of the scalp. This harmonises very well with the expressions, *sich den Kopf zerbrechen*, *den Kopf zusammennehmen*. In a former illness when I could not endure the slightest effort after continuous thought, and had no theoretical bias on this question, the muscles of the scalp, especially those of the back-head, assumed a fairly morbid degree of sensibility whenever I tried to think." (*Elem. der Psychophysik*, *ii.* 490-91.)

[1] Hermann's *Handb. der Physiologie*, iii. 2, p. 436.

object like a large book, noiselessly to his face, he will immediately become aware of the object's presence and position —likewise of its departure. A friend of the writer, making the experiment for the first time, discriminated unhesitatingly between the three degrees of solidity of a board, a lattice-frame and a sieve, held close to his ear. Now as this sensation is never used by ordinary persons as a means of perception, we may fairly assume that its felt quality, in those whose attention is called to it for the first time, belongs to it *quâ* sensation, and owes nothing to educational suggestions. But this felt quality is most distinctly and unmistakably one of vague spatial vastness in three dimensions—quite as much so as is the felt quality of the retinal sensation when we lie on our back and fill the entire field of vision with the empty blue sky. When an object is brought near the ear we immediately feel shut in, contracted ; when the object is removed, we suddenly feel as if a transparency, clearness, openness, had been made outside of us. And the feeling will, by anyone who will take the pains to observe it, be acknowledged to involve the third dimension in a vague, unmeasured state.[1]

The reader will have noticed, in this enumeration of facts, that the voluminousness of the feeling seems to bear very little relation to the size of the organ that yields it. The ear and eye are comparatively minute organs, yet give us feelings of great volume. The same lack of exact proportion between size of feeling and size of organ affected obtains within the limits of particular sensory organs. An object appears smaller on the lateral portions of the retina than it does on the fovea, as may be easily verified by holding the two forefingers parallel and a couple of inches apart, and transferring the gaze of one eye from one to the other. Then the finger not directly looked at will appear to shrink, and this whatever be the direction of the fingers. On the tongue a crumb, or the calibre of a small tube, appears larger than between the fingers. If two points kept equidistant (blunted compass- or scissors-points, for example) be drawn across the skin so as really to describe a pair of parallel lines, the lines will appear farther apart in some spots than in others. If, for example, we draw them horizontally across the face, so that the mouth falls between

[1] That the sensation in question is one of tactile rather than of acoustic sensibility would seem proved by the fact that a medical friend of the writer, both of whose *membranæ tympani* are quite normal, but one of whose ears is almost totally deaf, feels the presence and withdrawal of objects as well at one ear as at the other.

them, the person experimented upon will feel as if they began to diverge near the mouth and to include it in a well-marked ellipse. In like manner, if we keep the compass-points one or two centimetres apart, and draw them down the fore-arm over the wrist and palm, finally drawing one along one finger, the other along its neighbour, the appearance will be that of a single line, soon breaking into two, which become more widely separated about the wrist, to contract again in the palm, and finally diverge rapidly again towards the finger-tips.

The same length of skin moreover will convey a more extensive sensation according to the manner of stimulation. If the edge of a card be pressed against the skin, the distance between its extremities will seem shorter than that between two compass-tips touching the same terminal points.

The skin seems to obey a different law from the eye here. If a given retinal tract be excited, first by a series of points, and next by the two extreme points, with the interval between them unexcited, this interval will seem considerably less in the second case than it seemed in the first. In the skin the unexcited interval feels the larger. The reader may easily verify the facts in this case by taking a visiting card, cutting one edge of it into a saw tooth pattern, and from the opposite edge cutting out all but the two corners, and then comparing the feelings aroused by the two edges when held against the skin.

In the eye, intensity of nerve-stimulation seems to increase the *volume* of the feeling as well as its brilliancy. If we raise and lower the gas alternately, the whole room and all the objects in it seem alternately to enlarge and contract. If we cover half a page of small print with a grey glass, the print seen through the glass appears decidedly smaller than that seen outside of it, and the darker the glass the greater the difference. When a circumscribed opacity in front of the retina keeps off part of the light from the portion which it covers, objects projected on that portion may seem but half as large as when their image falls outside of it.[1] The inverse effect seems produced by certain drugs and anæsthetics. Morphine, atropine, daturine and cold blunt the sensibility of the skin, so that distances upon it seem less. Haschish produces strange perversions of the general sensibility. Under its influence one's body may seem either enormously enlarged or strangely contracted. Sometimes a single mem-

[1] Classen, *Physiologie des Gesichtssinnes*, p. 114; see also Riehl, *Der Philosophische Kriticismus*, ii., p. 149.

ber will alter its proportion to the rest; or one's back, for instance, will appear entirely absent, as if one were hollow behind. Objects comparatively near will recede to a vast distance, a short street assume to the eye an immeasurable perspective. Ether and chloroform occasionally produce not wholly dissimilar results. Panum, the German physiologist, relates that, when as a boy he was etherised for neuralgia, the objects in the room grew extremely small and distant, before his field of vision darkened over and the roaring in his ears began. He also mentions that a friend of his in church, struggling in vain to keep awake, saw the preacher grow smaller and smaller and more and more distant. I myself on one occasion observed the same recession of objects during the begining of chloroformisation. In various cerebral diseases we find analogous disturbances.

In the facts we have thus passed in review hardly anything has been said about position, direction, or anything that could fall under the concept of *localisation*. We have spoken of the mere bigness considered as a unit of each of the several feelings. What the reasons for the particular amount of this extensive muchness may be in each particular case is an interesting and important problem. One factor undoubtedly is the number of nerve-terminations simultaneously excited by the outward agent that awakens the sensation. When many skin-nerves are warmed, or much retinal surface illuminated, our feeling is larger than when a lesser nervous surface is excited. The single sensation yielded by two compass-points, although it seems simple, is yet felt to be much bigger and blunter than that yielded by one. The touch of a single point may always be recognised by its quality of sharpness. This page looks much smaller to the reader if he closes one eye than if both eyes are open. So does the moon, which latter fact shows that the phenomenon has nothing to do with parallax. The celebrated boy couched for the cataract by Cheselden thought, after his first eye was operated, "all things he saw extremely large," but being couched of his second eye, said "that objects at first appeared large to this eye, but not so large as they did at first to the other; and looking upon the same object with both eyes, he thought it looked about twice as large as with the first couched eye only, but not double, that we can anyways discover".

The greater extensiveness that the feeling of certain parts of the same surface has over other parts, and that one order of surface has over another (retina over skin, for example),

may also to a certain extent be explained by the operation of the same factor. It is an anatomical fact that the most spatially sensitive surfaces (retina, tongue, finger-tips, &c.) are supplied by nerve-trunks of unusual thickness, which must supply to every unit of surface area an unusually large number of terminal fibres. But the variations of felt extension obey probably only a very rough law of numerical proportion to the number of fibres. A sound is not twice as voluminous to two ears as to one; and the above-cited variations of feeling, when the same surface is excited under different conditions, show that the feeling is a resultant of several factors of which the anatomical one is only the principal. Many ingenious hypotheses have been brought forward to assign the co-operating factors where different conditions give conflicting amounts of felt space. Later we shall analyse some of these cases in detail, but it must be confessed here in advance that many of them resist analysis altogether.[1]

[1] It is worth while at this point to call attention with some emphasis to the fact that, though the anatomical condition of the feeling *resembles* the feeling itself, such resemblance cannot be taken by our understanding to explain *why* the feeling should be just what it is. We hear it untiringly reiterated by materialists and spiritualists alike that we can see no possible inward reason why a certain brain-process should produce the feeling of redness and another of anger: the one process is no more red than the other is angry, and the coupling of process and feeling is, as far as our understanding goes, a juxtaposition pure and simple. But in the matter of *spatial* feeling, where the retinal patch that produces a triangle in the mind is itself a triangle, &c., it looks at first sight as if the sensation might be a direct cognition of its own neural condition. Were this true, however, our sensation should be one of *multitude* rather than of continuous extent; for the condition is *number* of optical nerve-termini, and even this is only a remote condition and not an immediate condition. The immediate condition of the feeling is not the process in the retina, but the process in the brain; and the process in the brain may, for aught we know, be as unlike a triangle,—nay, it probably is so,—as it is unlike redness or rage. It is simply a *coincidence* that in the case of space one of the organic conditions, *viz.*, the triangle impressed on the skin or the retina, should lead to a representation in the mind of the subject observed similar to that which it produces in the psychological observer. In no other kind of case is the coincidence found. Even should we admit that we cognise triangles in space because of our immediate cognition of the triangular shape of our excited group of nerve-tips, the matter would hardly be more transparent, for the mystery would still remain, why are we so much better cognisant of triangles on our finger-tips than on the nerve-tips of our back, on our eye than on our ear, and on any of these parts than in our brain? Thos. Brown very rightly rejects the notion of explaining the shape of the space perceived by the shape of the "nervous expansion affected". "If this alone were necessary, we should have square inches and half inches, and various other forms, rectilinear and curvilinear, of fragrance and sound." (*Lectures*, xxii.)

So far, all we have established or sought to establish is the existence of the vague form or *quale* of spatiality as an inseparable element bound up with the other qualitative peculiarities of each and every one of our sensations. The numerous examples we have adduced of the variations of this extensive element have only been meant to make clear its strictly sensational character. In very few of them will the reader have been able to explain the variation by an added intellectual element, such as the suggestion of a recollected experience. In almost all it seemed the immediate psychic effect of a peculiar character of nerve-process excited; and all the nerve-processes in question agree in yielding what space they do yield to the mind in the shape of a simple total vastness, in which, *primitively* at least, no *order of parts* or *subdivisions* reigns.

Let no one be surprised at this notion of a space without order. There may be a space without order just as there may be an order without space.[1] And the primitive perceptions of space are certainly of an unordered kind. The order which the spaces first perceived potentially include must, before being realised by the mind, be woven into those spaces by a rather complicated set of intellectual acts—first the whole, then the parts. The primordial sensations of largeness which the spaces yield must be *measured and subdivided* by consciousness, and the various original totals of extension *added* together, so as to form by their synthesis what we know as the real Space of the objective world. In these operations, imagination, association, attention and selection play a decisive part; and although they nowhere add any new material to the space-data of sense, they so shuffle and manipulate these data and hide present ones behind imagined ones that it is no wonder if some authors have gone so far as to think that the sense-data have no spatial worth at all, and that the intellect, since it makes the subdivisions, also gives the spatial quality to them out of resources of its own.

To make clear what the problem of finding order, the problem of subdivision and synthesis, is, let us begin by supposing a creature with several sense-organs, each of which yields its own vaguely extensive feeling. (This

[1] Musical tones, *e.g.*, have an order of quality independent either of their space- or time-order. Music comes from the time-order of the notes upsetting their quality-order. In general, if *a b c d e f g h i j k*, &c., stand for an arrangement of feelings in the order of their quality, they may assume *any* space-order or time-order, as *d e f a h g*, &c., and still the order of quality will remain fixed and unchanged.

would probably represent an advanced stage of evolution, for it is likely that in the very earliest dawn of sensibility every impression made awakened the same vague but extensive feeling.) Now, in the creature we have assumed, so long as things do not evolve still farther, there is no reason to suppose that the several sense-spaces of which it may become conscious, each filled with its own peculiar content of feeling, should enter into any definite spatial intercourse with each other, or lie in any particular order of positions. Even in ourselves we can recognise this. Different feelings may coexist in us without assuming any particular spatial order. The sound of the brook near which I write, the odour of the cedars, the comfort with which my breakfast has filled me, and my interest in this paragraph, all lie distinct in my consciousness, but in no sense out-, or alongside, of each other. Their spaces are interfused and at most fill the same vaguely objective world. Even where the qualities are far less disparate, we may have something similar. If we take our subjective and corporeal sensations alone, there are moments when, as we lie or sit motionless, we find it very difficult to feel distinctly the length of our back or the direction of our feet from our shoulders. By a strong effort we can succeed in dispersing our attention impartially over our whole person, and then we feel the real shape of our body in a sort of unitary way. But in general a few parts are strongly emphasised to consciousness and the rest sink out of notice; and it is then remarkable how vague and ambiguous our perception of their relative order of location is. Obviously, for the orderly arrangement of the several sense-spaces in consciousness, something more than their mere separate existence is required. What is this further condition?

If spatial feelings are to be perceived alongside of each other and in definite order they must appear as parts in a vaster spatial feeling which can enter the mind simply and all at once. I think it will be seen that the difficulty of estimating correctly the form of one's body by pure feeling arises from the fact that it is very hard to feel its totality as a unit at all. The trouble is similar to that of thinking forwards and backwards simultaneously. When conscious of our head we tend to grow unconscious of our feet, and there enters thus an element of time-succession into our perception of ourselves which transforms the latter from an act of intuition to one of construction. This element of constructiveness is present in a still higher degree, and carries with it the same consequences, when we deal with objective spaces too great to be

grasped by a single look. The relative positions of the shops in a town, separated by many tortuous streets, have to be thus constructed from data apprehended in succession, and the result is a greater or less degree of vagueness.

That a sensation *be discriminated as a part* from out larger enveloping space is then the *conditio sine quâ non* of its being apprehended in a definite spatial order. The problem of ordering our feelings in space is then, in the first instance, a problem of discrimination, but not of discrimination pure and simple ; for then not only coexistent sights but coexistent sounds would necessarily assume such order, which they notoriously do not. Whatever is discriminated will appear as a small space within a larger space, it is true, but this is but the very rudiment of order. For the location of it within that space to become precise, other conditions still must supervene ; and the best way to study what they are will be to pause for a little and analyse what the expression " spatial order " means.

2. *Space-relations.*

Spatial order is an abstract term. The concrete perceptions which it covers are figures, directions, positions, magnitudes and distances. To single out any one of these things from a total vastness is partially to introduce order into the vastness. To subdivide the vastness into a multitude of these things is to apprehend it in a completely orderly way. Now what are these things severally? To begin with, no one can for an instant hesitate to say that some of them are qualities of sensation, just as the total vastness is in which they lie. Take figure : a square, a circle and a triangle appear in the first instance to the eye simply as three different kinds of impressions, each so peculiar that we should recognise it if it were to return. When Nunnely's patient had his cataracts removed, and a cube and a sphere were presented to his notice, he could at once perceive a difference in their shapes ; and though he could not say which was the cube and which the sphere, he saw they were not of the same figure. So of lines : if we can notice lines at all in our field of vision, it is inconceivable that a vertical one should not affect us differently from an horizontal one, and should not be recognised as affecting us similarly when presented again, although we might not yet know the name ' vertical,' or any of its connotations, beyond this peculiar affection of our sensibility. So of angles : an obtuse one affects our feeling immediately in a different way

from an acute one. Distance-apart, too, is a simple sensation—the sensation of a line joining the two distant points: lengthen the line, you alter the feeling and with it the distance felt.

But with distance and direction we pass to the category of space-*relations*, and are immediately confronted by an opinion which makes of all relations something *toto cœlo* different from all facts of feeling or imagination whatsoever. A relation, for the Platonising school in psychology, is an energy of pure thought, and as such quite incommensurable with the data of sensibility between which it may be perceived to obtain.

We may consequently imagine a disciple of this school to say to us at this point: "Suppose you *have* made a separate specific sensation of each line and each angle, what boots it? You have still the order of directions and of distances to account for; you have still the relative magnitudes of all these felt figures to state; you have their respective positions to define before you can be said to have brought order into your space. And not one of these determinations can be effected except through an act of relating thought, so that your attempt to give an account of space in terms of pure sensibility breaks down almost at the very outset. *Position*, for example, can never be a sensation, for it has nothing intrinsic about it; it can only obtain between a spot, line or other figure and extraneous co-ordinates, and can never be an element of the feeling of the sensible datum, the line or the spot, in itself. Let us then confess that thought alone can unlock the riddle of space, and that Thought is an adorable but unfathomable mystery."

Such a method of dealing with the problem has the merit of shortness. But let *us* be in no such hurry, but see whether we cannot get a little deeper, by patiently considering what these space-relations are.

'Relation' is a very slippery word. It has so many different concrete meanings that the use of it as an abstract universal may easily introduce bewilderment into our thought. We must therefore be careful to avoid ambiguity by making sure, wherever we have to employ it, what its precise meaning is in that particular sphere of application. At present we have to do with space-relations, and no others. Most 'relations' are feelings of an entirely different order from the terms they relate. The relation of similarity, *e.g.*, may equally obtain between jasmine and tuberose, or between Mr. Browning's verses and Mr. Story's; it is itself neither odorous nor poetical, and those may well be pardoned who have

denied to it all sensational content whatever. But just as, in the field of quantity, the relation between two numbers is another number, so in the field of space *the relations are facts of the same order with the facts they relate.* If these latter be patches in the circle of vision, the former are certain other patches between them. When we speak of the relation of direction of two points towards each other, we mean simply the sensation of the line that joins the two points together. The line *is* the relation; feel it and you feel the relation, see it and you see the relation; nor can you in any conceivable way think the latter except by imagining the former (however vaguely), or describe or indicate the one except by pointing to the other. And the moment you have imagined or pointed out the line, the relation stands before you, or your interlocutor, in all its completeness, with nothing further to be done. Just so the relation of direction between two lines is identical with the peculiar sensation of shape of the space enclosed between them. This is commonly called an angular relation.

If these relations are sensations, no less so are the relations of position. The relation of position between the top and bottom points of a vertical line *is* that line, and nothing else. The relations of position between a point and a horizontal line below it are potentially numerous. There is one more important than the rest, called its distance. This is the sensation, ideal or actual, of a perpendicular drawn from the point to the line.[1] Two lines, one from each extremity of the horizontal to the point, give us a peculiar sensation of triangularity. This feeling may be said to constitute the *locus* of all the relations of position of the elements in question. Rightness and leftness, upness and downness, are again pure sensations differing specifically from each other, and generically from everything else. If we take a cube and label one side *top*, another *bottom*, a third *front*, and a fourth *back*, there remains no form of words by which we can *describe* to another person which of the remaining sides is *right* and which *left*. We can only point and say *here* is right and *there* is left, just as we should say *this* is red and *that* blue, without being able to give an idea of them in words. Of two points seen beside each other at all, one is always affected by one of these feelings, and the other by the opposite; the same is true of the extremities of any line.[2]

[1] The whole science of geometry may be said to owe its being to the exorbitant interest the human mind takes in *lines*. We cut space up in every direction in order to manufacture them.

[2] Kant was, I believe, the first to call attention to this order of facts. Cp. *Prolegomena*, § 12.

Thus it appears indubitable that all space-relations except those of magnitude are nothing more or less than pure sensational elements. But *magnitude* appears to outstep this narrow sphere. We have relations of muchness and littleness between times, numbers, intensities and qualities, as well as spaces. It is impossible then that such relations should form a particular kind of simply spatial feeling. This we must admit: the relation of quantity is generic and occurs in many categories of consciousness, whilst the other relations we have considered are specific and occur in space alone. When our attention passes from a shorter line to a longer, from a smaller spot to a larger, from a feebler light to a stronger, from a paler blue to a richer, from a march tune to a galop, the transition is accompanied in the synthetic field of consciousness by a peculiar feeling of difference which is what we call the sensation of *more*,—more length, more expanse, more light, more blue, more motion. This transitional sensation of *more* must be identical with itself under all these different accompaniments, or we should not give it the same name in every case. We get it when we pass from a short vertical line to a long horizontal one, from a small square to a large circle, as well as when we pass between those figures whose shapes are congruous. But when the shapes are congruous our consciousness of the relation is a good deal more distinct, and it is most distinct of all when, in the exercise of our analytic attention, we notice, first, a *part*, and then the *whole*, of a *single* line or shape. Then the *more* of the whole actually sticks out, as a separate piece of space, and is so envisaged. The same exact sensation of it is given when we are able to superpose one line or figure on another. This condition *sine quâ non* of exact measurement of the *more* has led some to think that the feeling itself arose in every case from original experiences of superposition. This is probably not an absolutely true opinion, but for our present purpose that is immaterial. So far as the subdivisions of a sense-space are to be *measured* exactly against each other, objective forms occupying one subdivision must directly or indirectly be superposed upon the other, and the mind must get the immediate feeling of an outstanding *plus*. And even where we only feel one subdivision to be vaguely larger or less, the mind must pass rapidly between it and the other subdivision and receive the immediate sensible shock of the *more*.

We seem thus to have accounted for all space-relations, and made them clear to our understanding. They are nothing but sensations of particular lines, particular angles,

particular forms of transition, or, in the case of a *distinct more*, of particular outstanding portions of space after two figures have been superposed. These relation-sensations may actually be produced as such, as when a geometer draws new lines across a figure with his pencil to demonstrate the relations of its parts, or they may be ideal representations of lines &c. not really drawn. But in either case their entrance into the mind is equivalent to a more detailed subdivision, cognisance and measurement of the space considered. The *bringing of subdivisions to consciousness* constitutes then the entire process by which we pass from our first vague feeling of a total vastness to a cognition of the vastness in detail. The more numerous the subdivisions are, the more elaborate and perfect the cognition becomes. But inasmuch as all the subdivisions are themselves sensations, and even the feeling of "more" or "less" is, where not itself a figure, at least a sensation of transition between two sensations of figure, it follows, for aught we can as yet see to the contrary, that all spatial knowledge is sensational at bottom, and that, as the sensations lie together in the unity of consciousness, no new material element whatever comes to them from a supra-sensible source.[1]

The bringing of subdivisions to consciousness! This then is our next topic. They may be brought to consciousness under three aspects, in respect of their *locality*, in respect of their *size*, in respect of their *shape*.

In the eyes of many it will have seemed strange to call a relation a mere line, and a line a mere sensation. We may easily learn a great deal *about* any relation, say that between two points : we may divide the line which joins these, and distinguish it, and classify it, and find out *its* relations by drawing or representing new lines, and so on. But all this further industry has naught to do with our *acquaintance* with the relation itself, in its first intention. So cognised, the relation *is* the line and nothing more. It would indeed be fair to call it something less ; and in fact it is easy to understand how most of us come to feel as if the line were a much grosser thing than the relation. The line is broad or narrow, blue or red, made by this object or by that alternately, in the course of our experience ; it is independent of any of these accidents ; and so, from viewing it as no one of *such* sensible qualities, we may end by thinking of it as something which cannot be defined, except as the negation of all sensible quality whatever, and which needs to be put *into* the sensations by a mysterious act of 'relating thought'.

Another reason why we get to feel as if a space-relation must be something other than the mere feeling of a line or angle, is that between two positions we can potentially make any number of lines and angles, or find, to suit our purposes, endlessly numerous relations. The sense of this indefinite potentiality cleaves to our words when we speak in a general way of 'relations of place,' and misleads us into supposing that not even any single one of them can be exhaustively equated by a single angle or a single line.

Let us take the problem of Locality first, and begin with the simple case of a sensitive surface, only two points of which happen to be recipients of stimulation from without. How, first, are these two points felt as alongside of each other with an interval of space between them? We must be conscious of two things for this: of the duality of the excited points, and of the extensiveness of the unexcited interval. The duality alone, although a necessary, is not a sufficient condition of the spatial separation. We may, for instance, discern two sounds in the same place, sweet and sour in the same lemonade, warm and cold, round and pointed contact in the same place on the skin, &c.[1] In all discrimination the recognition of the duality of two feelings by the mind is the easier the more strongly the feelings are contrasted in quality. If our two excited points awaken identical qualities of sensation, they must, perforce, appear to the mind as one; and, not distinguished at all, they are, *a fortiori*, not localised apart. Spots four centimetres distant on the back have no qualitative contrast at all, and fuse into a single sensation. Points less than three-thousandths of a millimetre apart awaken on the retina sensations so contrasted that we apprehend them immediately as two. Now these unlikenesses which arise so slowly when we pass from one point to another in the back, so much faster on the tongue and finger-tips, but with such inconceivable rapidity on the retina, what are they? Can we discover anything about their intrinsic nature?

The most natural and immediate answer to make is that they are unlikeness of *place* pure and simple. In the words of a German physiologist,[2] to whom psychophysics owes much: "The sensations are from the outset (*vonvornherein*) localised. . . . Every sensation as such is from the very beginning affected with the spatial quality, so that this quality is nothing like an external attribute coming to the sensation from a higher faculty, but must be regarded as something immanently residing in the sensation itself."

And yet the moment we reflect on this answer an insuperable logical difficulty seems to present itself. No single *quale* of sensation can, by itself, amount to a consciousness of *position*. Suppose no feeling but that of a single one of the points ever to be awakened. Could that possibly be the

[1] This often happens when the warm and cold points, or the round and pointed ones, are applied to the skin within the limits of a single "Empfindungskreis".

[2] Vierordt, *Grundriss der Physiologie*, 5te Auflage, 1877, pp. 326, 436.

feeling of any special *whereness* or *thereness?* Certainly not. Only when a second sentient point arises can the first acquire a determination of up, down, right or left, and these determinations are with respect to that second point. Each point, so far as it is a *placed*, *is* then only by virtue of what it *is not*, namely, another point. This is as much as to say that position has nothing *intrinsic* about it; and that, although a feeling of bigness may, a feeling of *place* cannot, possibly form an *immanent* element in any single separate sensation. The very writer we have quoted has given heed to this objection, for he continues (p. 335) by saying that the sensations thus originally localised, "are only so *in themselves,* but not in the representation of consciousness, which is not yet present. . . . They are, in the first instance, devoid of all mutual relations with each other." But such a localisation of the sensation "in itself" would seem to mean nothing more than the susceptibility or *potentiality* of being distinctly localised when the time came and other conditions became fulfilled. Can we now discover anything about such susceptibility in itself before it has borne its ulterior fruits in the developed consciousness?

To begin with, every sensation of the skin and every visceral sensation seems to derive from its topographic seat a peculiar shade of feeling, which it would not have in another place. And this feeling *per se* seems quite another thing from the perception of the place. Says Wundt[1]:—

"If with the finger we touch first the cheek and then the palm, exerting each time precisely the same pressure, the sensation shows notwithstanding a distinctly marked difference in the two cases. Similarly, when we compare the palm with the back of the hand, the nape of the neck with its anterior surface, the breast with the back; in short, any two distant parts of the skin with each other. And moreover, we easily remark, by attentively observing, that spots even tolerably close together differ in respect of the quality of their feeling. If we pass from one point of our cutaneous surface to another, we find a perfectly gradual and continuous alteration in our feeling, notwithstanding the objective nature of the contact has remained the same. Even the sensations of corresponding points on opposite sides of the body, though similar, are not identical. If, for instance, we touch first the back of one hand, and then of the other, we remark a qualitative unlikeness of sensation. It must not be thought that such differences are mere matters of imagination, and that we take the sensations to be different because we represent each of them to ourselves as occupying a different place. With sufficient sharpening of the attention, we may, confining ourselves to the quality of the feelings alone, entirely abstract from their locality, and yet notice the differences quite as markedly."

Whether these local contrasts shade into each other with absolutely continuous gradations, we cannot say. But we know (continues Wundt)

[1] *Vorles. ii. Menschen- u. Thierseele*, Leip., 1863, i. 214.

that "they change, when we pass from one point of the skin to its neighbour, with very different degrees of rapidity. On delicately feeling parts, used principally for touching, such as the finger-tips, the difference of sensation between two closely approximate points is already strongly pronounced; whilst in parts of lesser delicacy, as the arm, the back, the legs, the disparities of sensation are observable only between distant spots."

The internal organs, too, have their specific *qualia* of sensation. An inflammation of the kidney is different from one of the liver; pains in joints and muscular insertions are distinguished. Pain in the dental nerves is wholly unlike the pain of a burn. But very important and curious similarities prevail throughout these differences. Internal pains, whose seat we cannot see, and have no means of knowing unless the character of the pain itself reveal it, are felt by us *where* they belong. Diseases of the stomach, kidney, liver, rectum, prostate, &c., of the bones, of the brain and its membranes, are referred to their proper position. Nerve pains describe the length of the nerve. Such localisations as those of vertical, frontal or occipital headache of intracranial origin, force us to conclude that parts which are neighbours, whether inner or outer, may possess by mere virtue of that fact a common peculiarity of feeling, a respect in which their sensations agree, and which serves as a token of their proximity. These *local* colourings are, moreover, so strong that we cognise them as the same, throughout all contrasts of sensible quality in the accompanying perception. Cold and heat are wide as the poles asunder; yet if both fall on the cheek, there mixes with them something that makes them in *that respect* identical, just as, contrariwise, despite the identity of cold with itself wherever found, when we get it first on the palm and then on the cheek, some difference comes, which keeps the two experiences for ever asunder.[1]

[1] Of the anatomical and physiological conditions of these facts we know as yet but little, and that little need not here be discussed. Some differences there must be, either in the composition of the nerve-tissue or in the manner in which, in different places, it is affected by the tissues in contact with it when they themselves are touched. These latter mechanical conditions cannot however obtain in the case of the retina, the different points of which exhibit nevertheless a wonderfully delicately graded system of sensations dependent on locality alone. Two principal hypotheses have been invoked in the case of the retina. Wundt (*Menschen- u. Thierseele*, i. 214) called attention to the changes of colour-sensibility which the retina displays as the image of the coloured object passes from the fovea to the periphery. The colour alters and becomes darker, and the change is more rapid in certain directions than in others. This alteration in general, however, is one of which, *as such*, we are wholly unconscious. We see the sky as bright blue all over, the modifications of the blue sensation being inter-

And now let us revert to the query propounded a moment since : Can these differences of mere quality in feeling, varying according to locality yet having each sensibly and intrinsically and by itself nothing to do with position, constitute the 'susceptibilities' we mentioned, the *conditions* of being perceived in position, of the localities to which they belong? The numbers on a row of houses, the initial letters of a set of words, have no intrinsic kinship with points of space, and yet they are the conditions of our knowledge where any house is in the row, or any word in the dictionary. Can the modifications of feeling in question be tags or labels of this kind which in no wise originally reveal the position of the spot to which they are attached, but guide us to it by what Berkeley would call a "customary tie"? Many authors have unhesitatingly replied in the affirmative. Lotze, who in his *Medizinische Psychologie*,[1] first described the sensations in this way, designated them, thus conceived, as *local-signs.* This term has obtained wide currency in Germany, and in speaking of the 'Local-sign theory' hereafter, I shall always mean the theory which denies that there can be in a sensation any element of *actual* locality, of *inherent* spatial order, any tone as it were which cries to us immediately and without further ado, 'I am *here*,' or 'I am *there*'.

If, as may well be the case, we by this time find ourselves tempted to accept the Local-sign theory in a general way, we have to clear up several farther matters. If a sign is to lead us to *the thing* it means, we must have some other source of knowledge of that thing. Either the thing has been given in a previous experience of which the sign also formed part —they are *associated;* or it is what Reid calls a 'natural'

preted by us, not as differences in the objective colour, but as distinctions in its locality. Lotze (*Medizinische Psychologie*, 333, 355), on the other hand, has pointed out the peculiar tendency which each particular point of the retina has to call forth that movement of the eye-ball which will carry the image of the exciting object from the point in question to the *fovea.* With each separate tendency to movement (as with each actual movement) we may suppose a peculiar modification of sensibility to be conjoined. This modification would constitute the peculiar local tinging of the image by each point. See also Sully's *Psychology*, pp. 118-121. Prof. B. Erdman has quite lately (*Vierteljahrsschrift f. wiss. Phil.*, x. 324-9) denied the existence of all evidence for such immanent *qualia* of feeling characterising each locality. Acute as his remarks are, they quite fail to convince me. On the skin the *qualia* are evident, I should say. Where, as on the retina, they are less so (Kries and Auerbach), this may well be a mere difficulty of discrimination not yet educated to the analysis.

[1] 1852, p. 331.

sign, that is, a feeling which, the first time it enters the mind, evokes from the native powers thereof a cognition of the thing that hitherto had lain dormant. In both cases, however, the sign is one thing, and the thing another. In the instance that now concerns us, the sign is a quality of feeling and the thing is a position. Now we have seen that the position of a point is not only revealed, but created, by the presence of other external points to which it stands in determinate *relations*. If the sign can by any machinery which it sets in motion evoke a consciousness either of the other points, or of the relations, or of both, it would seem to fulfil its function, and reveal to us the position we seek.

But such a machinery is already familiar to us. It is neither more nor less than the law of habit in the nervous system. When any point of the sensitive surface has been frequently excited simultaneously with, or immediately before or after other points, and afterwards comes to be excited alone, there will be a tendency for its perceptive nerve-centre to irradiate into the nerve-centres of the other points. Subjectively considered, this is the same as if we said that the local-sign, the peculiar feeling, of the first point, when aroused, will *suggest* the feeling of the entire region with whose stimulation its own excitement has been habitually *associated*.

Take the case of the stomach. When the epigastrium is heavily pressed, when certain muscles contract, &c., the stomach is squeezed, and its peculiar local-sign awakes in consciousness simultaneously with the local-signs of the other squeezed parts. There is also a sensation of total vastness aroused by the combined irritation, and *somewhere* in this the stomach-feeling seems to lie. Suppose that later a pain arises in the stomach from some non-mechanical cause. It will be tinged by the gastric local-sign, and the nerve-centre supporting this latter feeling will excite the centre supporting the dermal and muscular feelings habitually associated with it when the excitement was mechanical. From the combination the same peculiar vastness will again arise. In a word, 'something' in the stomach-sensation will 'remind' us of a total space of which the diaphragmatic and epigastric sensations also form a part, or, to express it more briefly still, will suggest the neighbourhood of these latter organs.[1]

[1] Maybe the localisation of intracranial pain is itself due to such association as this of local-signs with each other, rather than to their qualitative similarity in neighbouring parts (*supra*, p. 19); though it is con-

Revert to the case of two excited points on a surface with an unexcited space between them. The general result of previous experience has been that when either point was impressed by an outward object, the same object also touched the immediately neighbouring parts. Each point has thus its own local-sign associated with those of a circle of surrounding points, the association fading in strength as the circle grows larger. Each will revive its own circle ; but when both are excited together, the strongest revival will be that due to the *combined* irradiation. Now the tract *joining the two excited points* is the only part common to the two circles. And the feelings of this whole tract will therefore awaken with considerable vividness in the imagination when its extremities are touched by an outward irritant. The mind receives the impression of two distinct points, joined by an ideal line. The twoness of the points comes from the contrast of their local-signs : the line from the associations into which experience has wrought these latter. If no ideal line arises we have duality without sense of interval ; if the line be excited actually rather than ideally, we have the interval given with its ends, in the form of a single extended feeling. E. H. Weber, in the famous article in which he laid the foundations of all our accurate knowledge of these subjects, laid it down as the logical requisite for the perception of two separated points, that the mind should, along with its consciousness of them, become aware of an unexcited interval as such. I have only tried to show how the known laws of experience may cause this requisite to be fulfilled. Of course, if the local signs of the entire region offer but little qualitative contrast *inter se*, the line suggested will be but dimly defined or discriminated in length or direction from other possible lines in its neighbourhood. This is what happens in the back, where consciousness can sunder two spots, whilst only vaguely apprehending their distance and direction apart.

The relation of position of the two points *is* the suggested line. Turn now to the simplest case, that of a single

ceivable that association and similarity itself should here have one and the same neural basis. If we suppose the sensory nerves from those parts of the body beneath any patch of skin to terminate in the same sensorial brain-tract as those from the skin itself, and if the excitement of any one fibre tends to irradiate through the whole of that tract, the feelings of all fibres going to that tract would presumably both have a similar intrinsic quality, and at the same time tend each to arouse the other. Since the same nerve-trunk in most cases supplies the skin and the parts beneath, the anatomical hypothesis presents nothing improbable.

excited spot. How can *it* suggest its position? Not by recalling any particular line unless experience have constantly been in the habit of marking or tracing some one line from it towards some one neighbouring point. Now on the back, belly, viscera, &c., no such tracing habitually occurs. The consequence is that the only suggestion is that of the whole neighbouring circle, *i.e.*, the spot simply recalls the general region in which it happens to lie. By a process of successive construction, it is quite true that we can also get the feeling of distance between the spot and some other particular spot. Attention, by reinforcing the local-sign of one part of the circle, can awaken a new circle round this part, and so *de proche en proche* we may slide our feeling down from our cheek say to our foot. But when we first touched our cheek we had no consciousness of the foot at all.[1] In the extremities, the lips, the tongue and other mobile parts, the case is different. We there have an instinctive tendency, when a part of lesser discriminative sensibility is touched, to move the member so that the touching object glides along it to the place where sensibility is greatest. If a body touches our hand we move the hand over it till the finger-tips are able to explore it. If the sole of our foot touches anything we bring it towards the toes, and so forth. There thus arise lines of habitual passage from all points of a member to its sensitive tip. These are the lines most readily recalled when any point is touched, and their recall is identical with the consciousness of the distance of the touched point from the 'tip'. I think anyone must be aware when he touches a point of his hand or wrist that it is the relation to the finger-tips of which he is usually most conscious. Points on the fore-arm suggest either the finger-tips or the elbow (the latter being a spot of greater sensibility).[2] In the foot it is the toes, and so on. A point can only be cognised in its relations to the entire body at once by awakening a *visual*

[1] Unless, indeed, the foot happen to be spontaneously tingling or something of the sort at the moment. The whole surface of the body is always in a state of semi-conscious irritation which needs only the emphasis of attention, or of some accidental inward irritation, to become strong at any point.

[2] It is true that the inside of the fore-arm, though its discriminative sensibility is often less than that of the outside, usually rises very prominently into consciousness when the latter is touched. Its *æsthetic* sensibility to contact is a good deal finer. We enjoy stroking it from the extensor to the flexor surface around the ulnar side more than in the reverse direction. Pronating movements give rise to contacts in this order, and are frequently indulged in when the back of the fore-arm feels an object against it.

image of the whole body. Such awakening is even more obviously than the previously considered cases a matter of pure association.

This leads us to the eye. On the retina the fovea and the yellow spot about it form a focus of exquisite sensibility, towards which every impression falling on an outlying portion of the field is moved by an instinctive action of the muscles of the eyeball. Few persons, until their attention is called to the fact, are aware how almost impossible it is to keep a conspicuous visible object in the margin of the field of view. The moment volition is relaxed we find that without our knowing it our eyes have turned so as to bring it to the centre. This is why most persons are unable to keep the eyes steadily converged upon a point in space with nothing in it. The objects against the walls of the room invincibly attract the foveæ to themselves. If we contemplate a blank wall or sheet of paper, we always observe in a moment that we are directly looking at some speck upon it which, unnoticed at first, ended by ' catching our eye '. Thus whenever an image falling on the point P of the retina excites attention, it more habitually moves from that point towards the fovea than in any one other direction. The line traced by this motion is not always a straight line. When the direction of the point from the fovea is neither vertical nor horizontal but oblique, the line traced is often a curve, with its concavity directed upwards if the direction is upwards, downwards if the direction is downwards. This may be verified by anyone who will take the trouble to make a simple experiment with a luminous body like a candle-flame in a dark enclosure, or a star. Gazing first at some point remote from the source of light, let the eye be suddenly turned full upon the latter. The luminous image will necessarily fall in succession upon a continuous series of points, reaching from the one first affected to the fovea. But by virtue of the slowness with which retinal excitements die away, the entire series of points will for an instant be visible as an after-image, displaying the above peculiarity of form according to its situation.[1] These radiating lines are neither regular nor invariable in the same person, nor, probably, equally curved in different individuals. We are incessantly drawing them between the fovea and every point of the field of view. Objects remain in their peripheral indistinctness only so long as they are unnoticed.

[3] These facts were first noticed by Wundt ; see his *Beiträge*, p. 140, 202. See also Lamansky, *Pflüger's Archiv*, xi. 418.

The moment we attend to them they grow distinct through one of these motions—which leads to the idea prevalent among uninstructed persons that we see distinctly all parts of the field of view at once. The result of this incessant tracing of radii is that whenever a local-sign *P* is awakened by a spot of light falling upon it, it recalls forthwith, even though the eyeball be unmoved, the local-signs of all the other points which lie between *P* and the fovea. It recalls them in imaginary form, just as the normal reflex movement would recall them in vivid form ; and with their recall is given a consciousness more or less faint of the whole line on which they lie. In other words, no ray of light can fall on any retinal spot without the local-sign of that spot revealing to us, by recalling the line of its most habitual associates, its direction and distance from the centre of the field. The fovea acts thus as the origin of a system of polar co-ordinates, in relation to which each and every retinal point has through an incessantly repeated process of association its distance and direction determined. Were *P* alone illumined and all the rest of the field dark we should still, even with motionless eyes, know whether *P* lay high or low, right or left, through the *ideal streak*, different from all other streaks, which *P* alone has the power of awakening.[1]

So far all has been plain sailing, but now our course begins to be tortuous. When *P* recalls an ideal line leading to the fovea the line is felt in its entirety and but vaguely ; whilst *P*, which we supposed to be a single star of actual light, stands out in strong distinction from it. The ground of the distinction between *P* and the ideal line which it terminates is manifest—*P* being vivid while the line is faint ; but why should *P* hold the particular position it does, at the *end* of the line, rather than anywhere else—for example, in its middle ? That seems something not at all manifest.

[1] Notice that all these tracing motions, as we describe them, are supposed to awaken sensibility by the lines they draw on the *sensitive surfaces*, by moving these over objective points, lines which for an instant are felt through their whole extent. They are not supposed to be perceived by the muscular organs, as so much space moved through, along which the surface-sensations are distributed like beads upon a string. We shall later see reason to think that all the muscular sensations have a certain largeness ; they never can give rise in the mind to anything as distinct as the feeling of a *line*, with its direction and length. Only a sensitive *surface* is competent to that. Most English psychologists, however, assume that when muscles contract their sensation is that of the line traversed by the extremity which they move. Undoubtedly muscular contractions do break space up for us into lines ; they dissect it in a way impossible without their aid, but only because they *draw* lines for us upon our sensitive surfaces.

To clear up our thoughts about this latter mystery, let us take the case of an actual line of light, none of whose parts are ideal. The feeling of the line is produced, as we know, when a multitude of retinal points are excited together, each of which *when excited separately* would give rise to *one* of the feelings called local-signs. Each of these signs is the feeling of a small space. From their simultaneous arousal we might well suppose a feeling of larger space to result. But why should it be necessary that *in* this larger spaciousness each local-sign (or whatever other feeling now in the aggregate excitement corresponds to the local-sign) should appear out- and along-side of its neighbour in a strictly determinate position which it never abandons? Why should the sign *a* be always at one end of the line, *z* at the other, and *m* in the middle? For though the line be a unitary streak of light, its several constituent points can nevertheless break out from it, and become alive, each for itself, under the selective eye of attention.

The uncritical reader, giving his first careless glance at the subject, will say that there is no mystery in this, and that "of course" local-signs must appear alongside of each other, each in its own place;—there is no other way possible. But the more philosophic student, whose business it is to discover difficulties quite as much as to get rid of them, will reflect that it is conceivable that the partial factors might fuse into a larger space, within whose bulk each should be discriminated just as we discriminate a single voice in a chorus, not by its position but rather by its quality.[1] He will wonder why, after combining into the line, the points *can* become severally alive again: the separate puffs of a siren no longer strike the ear after they have fused into a certain pitch of sound. He will recall the fact that when, after looking at things with one eye closed, we double the number of retinal points affected by opening the other eye, the new retinal sensations do not as a rule appear *alongside* of the old ones and additional to them, but merely make the old ones seem larger and nearer. Why should the affection of new points on the *same* retina have so different a result? In fact he will see no sort of logical connexion between (1) the original separate local-signs, (2) the line as a unit, (3) the line with the points discriminated in it, and (4) the various nerve-processes which subserve all these different things. He will suspect our

[1] Remember the definition of local-sign (p. 21) as a mere "intensive" quality of feeling, which, *only in combination with other feelings, produces* a feeling of space-relation.

local-sign of being a very slippery and ambiguous sort of creature. Positionless at first, it no sooner appears in the midst of a gang of companions than it is found maintaining the strictest position of its own, and assigning place to each of its associates. How is this possible? Must we accept what we rejected a while ago as absurd, and admit the points each to have position *in se?*[1] Or must we suspect that our whole construction has been fallacious, and that we have tried to conjure up out of association qualities which the associates never contained?

There is no doubt a real difficulty here; and the shortest way of dealing with it would be to confess it insoluble and ultimate. Even if position be not an intrinsic character of any one of those sensations we have called local-signs, we must still admit that there is *something about* everyone of them that stands for the potentiality of position, and is the *ground* why the local-sign, when it gets placed at all, gets placed *here* rather than *there*. If this 'something' be interpreted as a physiological something, as the nerve-process that underlies the production of the feeling, it is easy to say

[1] How strong the temptation to admit this may become is well seen in the following quotation from Stumpf's *Psychologischer Ursprung der Raumvorstellung* (p. 121), a work which seems to me to give on the whole the most philosophical account of the subject yet published. Stumpf says: "We hold a sheet of paper before us and ask: Can different positions be distinguished, in and of themselves, when of precisely the same colour? They can, without doubt, and indeed in the same way and in the same sense in which two colours can be distinguished one from the other. It makes a difference in our experience, we notice, whether red is presented in this place or the other, just as it makes a difference whether green or red is offered. We recognise in both cases by simply looking at them that we have before us different species of the same genus. Red and green are both colours, but *different* colours as our sight assures us. Here and There in the field of vision are both positions, but *different* positions, as again our sight proves to us. Here, There, In that place, are specified differences of place, as green, red, blue, are of colour. So then separate positions are plainly distinguished as such in representation. Indeed they are so very distinct that identity never occurs between them (we cannot imagine two positions the same), and the same colours can be recognised as two only through the difference of their positions. To depict this difference I am naturally unable, for it is no qualitative difference; but notwithstanding that it is a real difference and can be *felt*. I can moreover as little *define* it as I can that of the two colours (as sensations namely, not ethereal vibrations). But I can *point it out*, and upon him who does not know it, or denies it, force conviction. In short, then, what is the meaning of 'Two things are different in representation,' other than 'They can as such be distinguished, belong to a particular class of distinguishable contents'? I know not in what other sense we can talk of the difference of colours. This criterion however is just as applicable to positions; nor do I know how difference of colours is distinguished from difference of positions." See also pp. 143-153.

in a blank way that, when it is excited alone, it is an 'ultimate fact' (1) that the separate feeling of positionless spot will result; that when it is excited together with other similar processes, but *without* the process of discriminative attention, it is another 'ultimate fact' (2) that the feeling of unitary line will come; and that the final 'ultimate fact' (3) is that, when the nerve-process is excited *in combination with* that other process which subserves the feeling of attention, what results will be the line with the local-sign inside of it determined to a particular place. Thus we should escape the responsibility of explaining, by falling back on the confessed inscrutability of the psycho-neural nexus in all cases. The moment we call the ground of localisation physiological, we need only point out *how*, in those cases in which localisation occurs, the physiological process *differs* from those in which it does not, to have done all we can possibly do in the matter. This would be unexceptionable logic, and with it we might let the matter drop, satisfied that there was no self-contradiction in it, but only the universal psychological puzzle of how a new mode of consciousness emerges whenever a fundamentally new mode of nervous action occurs.[1]

But, blameless as such tactics would logically be on our part, let us see whether we cannot push our theoretic insight a little farther. It seems to me we can. We cannot, it is true, give a reason why the line we feel when process (2) awakens should have its own peculiar shape; nor can we explain the essence of the process of discriminative attention. But we can see why, if the brute facts be admitted that a line may have one of its parts singled out by attention at all, and that that part may appear in relation to other parts at all, the relation must be *in the line itself*,—for the line and the parts are the only things supposed to be in consciousness. And we can furthermore suggest a reason why parts appearing thus in relation to each other in a line should fall into an immutable order, and each within that order keep its characteristic place.

If a lot of such local-signs all have any quality which evenly augments as we pass from one to the other, we can arrange them in an ideal serial order, in which any one local-sign must lie below those with more, above those with less,

[1] The reader will please remember that when we began to give our account of the matter, we said nothing of association, which is a psychic law, but spoke only of the "law of habit in the nervous system". This might easily bring it about, that a point, positionless through nerve-process (1), should appear embedded in a line through nerve-process (2), and finally should start out from a particular part of that line through nerve-process (3).

of the quality in question. It must divide the series into two parts,—unless indeed it have a maximum or minimum of the quality, when it either begins or ends it.

Such an ideal series of local-signs in the mind is, however, not yet identical with the feeling of a line in space. Touch a dozen points on the skin *successively*, and there seems no necessary reason why the notion of a definite line should emerge, even though we be strongly aware of a gradation of quality among the touches. We may of course symbolically arrange them in a line in our thought, but we can always distinguish between a line symbolically thought and a line directly felt.

But note now the peculiarity of the nerve-processes of all these local-signs: though they may give no line when excited successively, when excited *together* they do give the actual sensation of a line in space. The sum of them is the neural process of that line; the sum of their feelings is the feeling of that line; and if we begin to single out particular feelings from the mass, and notice them by their rank in the scale, it is impossible to see how this rank can *appear* except as an actual fixed space-position sensibly felt as a bit of the total line. The scale itself appearing as a line, rank in it must appear as a definite part of the line. If the seven notes of an octave, when heard together, appeared to the sense of hearing as an outspread *line* of sound—which it is needless to say they do not—why then no one note could be discriminated without being localised, according to its pitch, *in* the line, either as one of its extremities or as some part between.[1]

[1] But not alone the gradation of their quality arranges the local-sign feelings in a scale. Our *movements* arrange them also in a *time*-scale. Whenever a stimulus passes from point *a* of the skin or retina to point *f*, it awakens the local-sign feelings in the perfectly definite time-order *abcdef*. It cannot excite *f* until *cde* have been successively aroused. The feeling *c* sometimes is preceded by *ab*, sometimes followed by *ba*, according to the movement's direction; the result of it all being that we never feel either *a*, *c* or *f*, without there clinging to it faint reverberations of the various time-orders of transition in which, throughout past experience, it has been aroused. To the local-sign *a* there clings the tinge or tone, the penumbra or fringe, of the transition *bcd*. To *f*, to *c*, there cling quite different tones. Once admit the principle that a feeling may be tinged by the reproductive consciousness of an habitual transition, even when the transition is not made, and it seems entirely natural to admit that, if the transition be habitually in the order *abcdef*, and if *a*, *c* and *f* be felt separately at all, *a* will be felt with an essential *earliness*, *f* with an essential *lateness*, and that *c* will fall between. Thus those psychologists who set little store by local-signs and great store by movements in explaining space-perception, would have a perfectly definite time-order out of which to account for the definite order of positions that appears when sensitive spots are excited all at once. Without, however, the preliminary

And with this we can close the first great division of our subject. We have shown that, within the range of every sense, experience takes *ab initio* the spatial form. We have also shown that in the cases of the retina and skin every sensible total may be subdivided by discriminative attention into sensible parts, which are also spaces, and into relations between the parts, these being sensible spaces too. Furthermore, we have seen that different parts, once discriminated, necessarily fall into a determinate order, both by reason of definite gradations in their quality, and (in a footnote) by reason of the fixed order of time-succession which voluntary attention must follow in its movements when it passes from one to another of them. But in all this nothing has been said of the comparative *measurement* of one sensible space-total against another, or of the way in which, by summing our divers simple sensible space-experiences together, we end by constructing what we regard as the unitary, continuous and infinite objective Space of the real world. To this more difficult inquiry we next pass.

(*To be continued.*)

admission of the 'ultimate fact' that this collective excitement shall feel like a *line* and nothing else, it can never be explained why the new order should needs be an order of *positions*, and not of an altogether different sort. We shall hereafter have any amount of opportunity to observe how thoroughgoing is the participation of motion in all our spatial measurements. Whether the local-signs have their respective qualities evenly graduated or not, the feelings of transition must be set down as among the *veræ causæ* in localisation. But the gradation of the local-signs is hardly to be doubted; so we may believe ourselves really to possess two sets of reasons for localising any point we may happen to distinguish from out the midst of any line or any larger space.

II.—"IDIOPSYCHOLOGICAL ETHICS."

By Professor Henry Sidgwick.

In Mind No. 39 I reviewed Dr Martineau's *Types of Ethical Theory*. A reply from Dr. Martineau, somewhat longer than my review, appeared in the next number. On reading this reply, it seemed to me desirable to deal in different ways with the historical and the theoretical portions of it. Dr. Martineau's answers to my criticisms on his historical work convinced me that there was nothing to be gained by a prolonged and enlarged controversy on this part of the subject: a brief and immediate rejoinder, which I gave in the following number, was all that seemed desirable. The case was otherwise with the further explanations which Dr. Martineau had been led to give of his own views: since, on the one hand, these threw new lights on certain parts of Dr. Martineau's doctrine, which rendered necessary a partial modification of my objections to it; while, on the other hand, they suggested to me that possibly a fuller statement of these objections might render them more intelligible to Dr. Martineau, and to any others who may share his ethical views.

The appearance of a second edition of Dr. Martineau's book seems to afford a favourable opportunity for this fuller statement; and, for the convenience of the reader, I shall take up the question *de novo*, and shall not refer—except in one note—to my original article; while, at the same time, I shall try to avoid any mere repetition of arguments there urged.

I will begin by criticising an unwarranted assumption—as it appears to me—which underlies Dr. Martineau's whole procedure. He characterises his ethical system as "idiopsychological": that is, he professes to give the "story" that the "moral consciousness tells of itself," or "what the moral sentiment has to say of its own experience". And he appears generally to entertain no doubt that there is one and the same "story" to be told in all cases; that if the same question be definitely put to the moral consciousness of any number of different individuals, they will return definitely the same answer as his own. He holds, at any rate,[1] that all

[1] ii. 16, 17. The references are throughout to the second edition (vol. ii).

men in their particular moral judgments judge primarily and essentially of the moral preferability of particular impulses or incentives to action, and that so far as the impulses presented are similar men's judgments of their moral value will also be similar. "However limited the range of our moral consciousness, it would lead us all to the same verdicts, had we all the same segment of the series [of impulses] under our cognisance" (p. 61) . . . "the instant that any contending principles press their invitations on [a man], *there* too is the consciousness of their respective rights . . . his duty consists in acting from the right affection, about which he is *never left in doubt*" (p. 72)—unless, that is, he wilfully neglects to use the faculty of moral insight with which he is endowed, for "the inner eye is ever open, unless it droops in wilful sleep".

Now I do not find that Dr. Martineau has adduced any sufficient reasons for making this fundamental assumption. He can hardly rest it on the agreement of the accounts given of the moral consciousness by the persons who have most systematically reflected on it; since this class includes, as I shall presently show, moralists who disagree fundamentally with Dr. Martineau. And I see no sign that his assumption is based on a careful induction from the accounts actually given by plain men of their moral experience. Indeed in other passages Dr. Martineau seems to admit that the moral judgments of mature men do not actually manifest an undeviating harmony with his own scale of preferability. "To find the true instinct of conscience," he says, "we may more often go with hope to the child than to the grandparents. . . . of most men the earlier years are nobler and purer . . . unfaithfulness inevitably impairs and corrupts the native insight." That there is an element of truth in this I would not deny: it does not, however, appear that Dr. Martineau has made any such careful and extensive observation of the moral judgments of children as would justify him in affirming broadly that they are more in harmony with his own scale than those of mature men; and, in any case, the assumption that the divergences of the latter are due to "unfaithfulness" is one that seems to me to require a kind of justification that he has not attempted.

I have been led—both from observation of my contemporaries and from examination of the morality of other ages and countries—to take an essentially different view of the variation and conflict in men's moral judgments and sentiments which their discourse appears to reveal. I agree, indeed, with Dr. Martineau that

such variations are to a considerable extent due to differences in the objects contemplated; but I hold that they cannot entirely or even mainly be referred to this cause: that when we have made full allowance for this, an important element of difference still remains which it appears to me unwarrantable to attribute to "unfaithfulness," or "wilful drooping of the inward eye" in one or other of the differing individuals. Among reflective persons, who belong to the same age of history and are members of the same civilised society, the amount of difference that is disclosed by a comparison of moral opinions bears usually a small proportion to the amount of agreement; but it is probably rare that some material difference is not discernible, whenever two such persons compare frankly and fully the results of the spontaneous, unreflective play of their moral sentiments. And if we survey the views of the whole aggregate of persons who devote serious thought to moral questions at any given time, we cannot but see that systematic ethical reflection,—while it tends to group individuals together into so-called schools, and so to intensify the consciousness of a common morality among members of the same group,—has so far tended to develop profounder differences between one group and another.

As an illustration of the irreducible differences of which I am speaking, I may note a point of some importance on which I find myself in disagreement with Dr. Martineau. In stating what he calls the "fundamental ethical fact of which we have to find the interpretation" (p. 18), he affirms that "wherever disapprobation falls, we are impelled to award disgrace and such external ill as may mark our antipathy, with the consciousness that we are not only entitled but constrained to this infliction". Now I find that the sense of being "constrained to award external ill" to a fellow-man of whose conduct I disapprove, not in order to prevent worse mischief to him or to others, but merely to "mark my antipathy," is entirely absent from my moral consciousness; and, what is more, I feel an instinctive moral aversion to the impulse thus characterised which goes decidedly beyond my reflective and deliberate disapprobation of it. But I do not therefore affirm that Dr. Martineau has wrongly analysed his own moral consciousness; still less do I suggest that it has been corrupted through unfaithfulness. I should rather say that his sentiment appears to me to belong to that earlier stage in the development of morality in which legal punishment is regarded as essentially retributive, instead of preventive. Nor do I affirm that the common sense even of civilised mankind

has as yet passed out of this stage; but I think that it is beginning to pass out of it, and that a continually increasing number of reflective persons are conscious of no *moral* impulse to "award external ill" to their fellow-creatures, except as a means to some ulterior good.

I have made these preliminary remarks, because, while the main object of this paper is to show the erroneousness of Dr. Martineau's account of the moral judgments which we, here and now, habitually pass, it is important to make clear at the outset that the question discussed does not seem to me to admit of being answered so decisively as Dr. Martineau assumes. I think that the assumption of a common moral consciousness which we all share, and which each of us can find in himself by introspection, is to a great extent true; that to a great extent we—educated members of the same society—tend, in our ordinary thought and discourse, to pass similar judgments of approbation and disapprobation, feel similar sentiments of liking or aversion for the conduct so judged, and similar promptings to encourage or repress it. But, after carefully reflecting on my own moral sentiments and comparing them with those of others—to whom I have no reason to attribute a less careful reflection—I do not find in the result anything like the extent of agreement which Dr. Martineau assumes. This is the explanation of the "hesitation" that Dr. Martineau finds in my attempt to formulate the morality of common sense: on any point on which opposing opinions appear to me tolerably balanced, so that neither can fairly be described as eccentric, I represent common sense as hesitating: to decide any such point either way would be an improper substitution of my own judgment for that common judgment of educated and thoughtful persons which I am trying to ascertain and formulate. Nor do I consider the verdict of common sense, so far as it is clearly pronounced, as final on the question of ethical truth or falsehood; since a study of the history of human opinion leads me to regard the current civilised morality of the present age as merely a stage in a long process of development, in which the human mind has—I hope—been gradually moving towards a truer apprehension of what ought to be. As reflection shows us in the morality of earlier stages an element of what we now agree to regard as confusion and error, it seems reasonable to suppose that similar defects are lurking in our own current and accepted morality; and, in fact, observation and analysis of this morality, so far as I have been able to ascertain what it is, has led me to see such defects in it. How to eliminate, if

possible, these elements of error, confusion and uncertainty is, in my view, the fundamental question of ethics, which can only be answered by the construction of an ethical system. With this task I am not at present concerned—further than to explain that I do not expect to find this true moral system where Dr. Martineau looks for it; that is, by introspection directed to the moral sentiments and apparently immediate moral judgments caused in my mind by the contemplation of particular acts, apart from systematic consideration of these acts and their consequences in relation to what I adopt as the ultimate end of action. That I should have such sentiments, and, where prompt action is needed, should act on such judgments, is at once natural and, in my opinion, conducive to the ultimate end; but I continually find that these immediate pronouncements have to be corrected and restrained by a careful consideration of consequences.

To sum up: there are, in my view, three fundamentally distinct questions, which ought to be investigated by essentially different methods: (1) what the received morality was in other ages and countries, which is to be answered by impartial historical study; (2) what the received morality is here and now, which is to be ascertained by an unprejudiced comparison of one's own moral judgments with those of others; (3) what morality ought to be—a problem which can only be solved by the construction of an ethical system. It is the answer which Dr. Martineau has given to the second of these questions—and this alone—which I propose now to consider.

According to Dr. Martineau, the "broad fact" of the moral consciousness is that "we have an irresistible tendency to pass judgments of right and wrong" (p. 17): when I pass such judgments "as an agent" on my own conduct "I speak *of my duty*"—a word which "expresses the sense we have of a debt which we are bound," or "obliged," to pay. This sense of obligation implies, of course, a conflict between the moral judgment and some impulse prompting us to conduct disapproved by our moral judgment. But in Dr. Martineau's view it necessarily implies more than this; it necessarily implies the recognition of "another person," who has authority over us: the dictates of conscience, he holds, are unmeaning unless we give them a Theistic interpretation.

Now I quite admit that a Christian Theist must necessarily conceive of the dictates of conscience as Divine commands; but I think it rash and unwarrantable in him to affirm that

they cannot be regarded as authoritative unless they are so conceived. To me, indeed, it is inconceivable that the authoritativeness or bindingness of moral rules should depend essentially on the fact that they emanate from "another Person". Dr. Martineau himself admits—or I should rather say emphatically declares—that it is not a Person regarded apart from moral attributes that can be conceived as the source of the authority of which we are speaking; it is, he says, "an inward rule of Right which gives law to the action of God's power . . . which first elevates into authority what else would only operate as a necessity or a bribe" (p. 113). If, then, moral rules, when conceived as Divine commands, are thought to have authority not because they emanate from an Omnipotent Person, but because they emanate from a person who wills in accordance with a rule of Right, I cannot conceive how they should lose this authority even if the "other person" is eliminated altogether, provided that the "rule of right" is left.

I may perhaps make this clearer by referring to an analogy which Dr. Martineau elsewhere draws between mathematical and moral truth. "There is," he says, "as much ground, or as little, for trusting to the report of our moral faculty as for believing our intellect respecting the relations of number and dimensions. Whatever be the 'authority' of Reason respecting the true, the same is the 'authority' of Conscience respecting the right and the good"[1] (p. 114).

Now I presume that Dr. Martineau does not maintain that the "authority of Reason respecting the relations of number and dimension in regard to time" cannot "really

[1] In dealing with this point in my former article I quoted passages in which, as it appeared to me, Dr. Martineau committed himself to a "definitely and confidently anthropomorphic conception of the Divine mind". In his reply, Dr. Martineau affirmed that in the passages quoted he intended to "*explain* an anthropomorphic habit" of which he had "exposed the error," not to *adopt* it as his own. I accept, of course, Dr. Martineau's account of his intentions; but, having carefully re-read the passages from which I quoted—especially p. 86 (1st ed.) with its context, which remains unaltered (as p. 92) in the present edition—I feel bound to say that they are not calculated to convey to the mind of an ordinary reader what he now declares to be his meaning. Dr. Martineau writes throughout from an avowedly Christian point of view: hence, when he describes "Christianity" and "Christian feeling" as taking "naturally" a certain view of the Divine Nature, without which "the negative element requisite for every ethical conception, the antagonism to something resisted and rejected, would be wanting; and the evangelical and the heathen Theism would be without further essential distinction"—I do not think any ordinary reader will suppose that Dr. Martineau is intending to "expose the error" of the view in question.

exist" for an atheistic mathematician—one who has, in Laplace's phrase, had no "besoin de l'hypothèse de Dieu" in his system of the physical universe. But if he does not maintain this, I think he is bound in consistency to admit that the "authority of Conscience respecting the right" may similarly exist for the atheistic moralist.

I have accepted, for the sake of argument, Dr. Martineau's distinction between 'Reason' and 'Conscience'. But, to prevent misunderstanding, I ought to explain that, in my view, the "authority of Conscience" is the authority of Reason in its application to practice: "authority" or "obligation," in my view, expresses the relation that we recognise on reflection between a judgment as to what ought to be willed by us and a non-rational impulse prompting in a direction opposed to this judgment.

Let us now consider more closely the general nature of the judgment to which this authority—however understood—is recognised as belonging. I find that in discussing this question Dr. Martineau, on the one hand, labours needlessly a point not likely to be disputed; and, on the other hand, confuses or slurs over the distinction which I regard as fundamentally important. We shall all, I conceive, agree that moral approbation, strictly taken,[1] relates to what Dr. Martineau loosely calls the "inner spring or inner principle" of an action—*i.e.*, that it relates to the mental or psychical element of the complex fact which we call action; as distinct from the muscular movement that follows the psychical volition, or any external consequences of this movement considered as external and not as foreseen by the agent. Further, I agree with Dr. Martineau in defining the object of the common moral judgment as volition or choice of some kind. Our difference begins when we ask what the object is which is willed or chosen. In Dr. Martineau's view the choice is always between particular impulses to action—whether "propensions," "passions," "affections" or "sentiments"; in my view it is, in the largest and most important class of cases, among different sets of foreseen external effects, all of which are conceived to be within the power of the agent. That Dr. Martineau has not clearly seen the point at issue may, I think, be inferred from the language (cp. pp. 129-30) in which he criticises my own procedure. He

[1] I say 'strictly taken,' because in a wider sense of the terms we approve or disapprove of a human being and his actions without distinguishing between their voluntary and involuntary elements; just as—in Dr. Martineau's words—we "approve a house" or "condemn a ship," from a consideration of its fitness or unfitness for some accepted end.

says that I, among others, "by no means call in question the general principle that moral worth or defect is to be estimated by the inward *affection or intention* whence actions flow"; and implies that I have thereby "admitted the necessity" of "enumerating" and "classifying" motives or impulses to action, though I afterwards "run away from the work as unmanageable and superfluous". But it is plain that if I am right in regarding the choice of right outward effect as being, in the most important cases, the primary object of ordinary moral judgment, my primary business is to enumerate and classify, not the propensions or passions that prompt to choice, but the outward effects that ought to be chosen and intended. It is always the choice or intention, and not its actual result, that is approved or disapproved; but the differences of choice or intention, on which the moral judgment turns, can only be conceived as differences in the objects chosen; and can therefore, on my view, only be sought in that "field of external effects of action" which Dr. Martineau would relegate to a separate and subsequent investigation.

Nor is the case practically altered by that condition of our approval of right choice to which I have (in my *Methods of Ethics*, bk. iii., ch. i., p. 3) called attention under the term "subjective rightness"; *viz.*, that the outward effects which we judge to be the right objects of choice must not be thought by the agent to be wrong. The condition is, in my view, an essential one; if, in any case—owing to what we regard as a mistake of conscience—the agent makes what we hold to be the right choice of foreseen outward effects, himself conceiving it to be wrong, we certainly withhold our moral approbation. If we are asked whether in this unhappy situation a man ought to do what he mistakenly believes to be his duty, or what really is his duty if he could only think so, the question is found rather perplexing by common sense; and—so far as it can ever be a practical question—it would, I think, be answered differently in different cases, according to the magnitude and importance of the error of conscience. But the difficulties of this question need not now be considered; for, obviously, they arise equally whether the mistake of conscience relates to choice of motives or to choice of outward effects; and, however essential it may be that a moral agent should do what he believes to be right, this condition of the object of moral approbation does not require or admit of any systematic development. Thus the details with which ethics is concerned still remain to be sought elsewhere; and, on my view, they are found by common sense primarily in

the region of external effects, and not among the different propensions, passions, affections or sentiments impelling the agent.

It may be said, perhaps, that the issue as I have stated it cannot be fundamental, because the effects as foreseen must operate as motives—as causing desires or aversions—otherwise action would not result.[1] But my point is that the effects which, in our judgment, make an action bad may not have been desired at all, but only accepted as inevitable accompaniments of what was desired, and that the effects which make it good may have only been desired as a means to some further end; and that it is not to the desired effects of volition, *quâ* desired, but to the effects foreseen as certain or highly probable—and so chosen instead of other possible consequences—that our judgments of approbation and disapprobation are commonly directed under the heads of justice, temperance, good faith, veracity and other leading branches of duty. I contend that the approbation implied by the designation of agents or acts as truthful, just, temperate—and the disapprobation implied by the opposite terms—are commonly given independently of any consideration of motive, as distinct from intention or choice to produce certain external effects (using 'external' to include effects on the agent's physical system). I do not say, as Dr. Martineau has understood me to say, that we regard the motives of such acts as ethically unimportant: I recognise that common sense distinguishes motives as higher and lower, and even positively as good and bad; and if we definitely conceive of (say) truth-speaking as prompted by a motive recognised as bad, we do not approve of the agent's state of mind,

[1] Dr. Martineau would not exactly urge this; because he considers it fundamentally important to lay stress on the absence of any conscious foresight of effects in the case of what he distinguishes as "primary springs of action," which urge us, "in the way of unreflecting instinct," to seek blindly ends not preconceived. I agree that such blind impulses have a considerable place among the normal causes of our voluntary action, though I think he has exaggerated their place; according to my experience, they cannot be at all powerful or prolonged without arousing some representation of the effects to which they prompt. But, in any case, I cannot understand how they can be morally judged *as blind;* I conceive that the effects of the action to which such unreflecting impulses prompt, however absent or faintly represented when the impulse operates, are necessarily represented when it becomes the object of a moral judgment. This will appear, I think, if we reflect on any example included in Dr. Martineau's exposition of the "scale of springs of action"—*e.g.*, in comparing the appetite for food with the desire of the pleasure of eating, he says, "it is surely meaner to eat for the pleasure's sake than to appease the simple hunger": well, it seems to me clear that, so far as I pass this judgment, it is not on hunger, *quâ* blind impulse, but on hunger conceived as an impulse directed towards the removal of an organic want.

though I should say that we still approve of the act. We think that the veracious agent has willed what he ought to have willed, though he ought to have willed something else too, *viz.*, the suppression of the bad motive—so far, at least, as it was within his power to suppress it while doing the act. I introduce this last qualification, because I think that it is not always within the power of the will—and therefore not always strictly a duty—to get rid of an objectionable motive.

Take the case of the motive which Dr. Martineau places last,—Vindictiveness, or the desire of malevolent pleasure. Bentham and Sir James Stephen[1] regard it as an important part of the benefits of criminal law that it provides the "pleasure of revenge," or, as Sir J. Stephen says, a "legitimate satisfaction for the passion of revenge". These phrases, I think, give some offence to our common moral consciousness; and, in my *Methods of Ethics*, I have suggested that "perhaps we may distinguish between the impulse to inflict pain and the desire of the antipathetic pleasure which the agent will reap from this infliction, and approve the former in certain circumstances, but condemn the latter absolutely". I suggest this, however, with some hesitation, on account of the great difficulty of separating the two impulses. A man under the influence of a strong passion of resentment can hardly exclude from his mind altogether an anticipation of the pleasure that he will feel when the passion is gratified; and, if so, he can hardly exclude altogether the desire of this gratification. It is, I think, clear to common sense that a man ought not to *cherish* this desire, to gloat over the anticipated gratification; but it is, perhaps, too severe to say that the desire of malevolent pleasure should be excluded altogether. If, as Sir James Stephen says, the "deliberate satisfaction which criminal law affords to the desire of vengeance" excited by gross crimes is an indispensable means of preventing such crimes—human nature being what it is; if it is important for the well-being of society that men should derive "hearty satisfaction" from the hanging of a cold-blooded murderer, or the infliction of penal servitude on an unscrupulous swindler; then it is, perhaps, going too far to condemn absolutely the desire of this satisfaction. In any case, it seems to me contrary to common sense to say that the prosecution of such a murderer or swindler becomes a bad act if the prosecutor is conscious of desiring the malevolent pleasure that he will receive from the criminal's punishment: we commonly judge such an act to be right,

[1] Cp. *General View of the Criminal Law of England*, ch. iv.

even though partly done from a motive which we think ought to be excluded as far as possible. It is sometimes said that, though a man cannot help *having* the inferior motive, he can and ought to avoid *yielding* to it, or 'identifying himself' with it; but here there seems to me some psychological confusion or error. I cannot understand how a man can avoid 'yielding to' a desire, if he cannot exclude it from his mind while doing precisely the act to which it prompts.[1] Even if the motive of an externally right act were entirely bad—*e.g.*, if a man were strictly veracious with a view to gain and ultimately misuse the confidence of his hearers—common sense, I conceive, would still decide that his veracious volition was right *quâ* veracious; only that it coexisted with a wrong intention as to future conduct, and did not indicate any moral worth—*i.e.*, any general tendency to right actions—in the agent.

It is still more clear to common sense that bad acts may be done from the best conceivable motives; indeed we are all familiar with historical examples of men prompted by religion, patriotism or philanthropy to acts that have excited most general and intense moral disapprobation. When we contemplate Torquemada torturing a heretic for the eternal good of souls, Ravaillac assassinating a monarch in the cause of God and his church, a Nihilist murdering a number of innocent persons in order to benefit his country by the destruction of an emperor, a pastor poisoning his congregation in the sacramental wine in the hope of securing their eternal happiness—we recognise that such acts are (so far as we know) not only subjectively right, but done from the very highest motives; still common sense does not therefore hesitate to pronounce them profoundly bad.

It may be said, however, that my argument admits that the distinction of 'good' and 'bad,' or 'higher' and 'lower,' motives is recognised by common sense as important; it must, therefore, be the duty of the moralist to make this distinction as precise as possible, in its application to different classes of motives; and in doing this he will be led to frame such a scale as Dr. Martineau's. But a careful reflection upon our common judgments or motives will lead us, I think, to interpret and systematise them in a manner fundamentally different from Dr. Martineau's. According to him, the springs of human action may be arranged in an

[1] Very often the course of action prompted by a bad motive would differ palpably in details from that prompted by a pure regard for duty; and such differences would afford occasions for "not yielding" to the bad motive. But I know no reason for assuming that palpable differences of this kind would be found in all cases.

ethical scale, so constituted that if any of its "propensions,"[1] "passions," "affections" and "sentiments" thus classified ever comes into conflict with one higher in the scale, right volition consists in choosing the "higher" in preference to the "lower". The view of common sense appears to me rather that, in all or most cases, a natural impulse has its proper sphere, within which it should be normally operative, and that the question whether a higher motive should yield to a lower is one that cannot be answered decisively in the general way in which Dr. Martineau answers it: the answer must depend on the particular conditions and circumstances of the conflict. For a higher motive may intrude unseasonably into the proper sphere of the lower, just as the lower is liable to encroach on the higher; only since there is very much less danger of the former intrusion, it naturally falls into the background in ethical discussions and exhortations that have a practical aim. The matter is complicated by this further consideration: we recognise that as the character of a moral agent becomes better, the motives that we rank as "higher" tend to be developed, so that their normal sphere of operation continually enlarges at the expense of the lower. Hence there are two distinct aims in moral regulation and culture, so far as they relate to motives: (1) to keep the "lower" motive within the limits within which its operation is considered to be legitimate and good on the whole, so long as we cannot substitute for it the equally effective operation of a higher motive; and at the same time (2) to effect this substitution of "higher" for "lower" gradually, so far as can be done without danger, up to a limit which we cannot definitely fix, but which we

[1] For the reader's convenience, I give the table of the springs of action in which Dr. Martineau has collected the results of his survey:—

LOWEST.

1. Secondary Passions—Censoriousness, Vindictiveness, Suspiciousness.
2. Secondary Organic Propensions—Love of Ease and Sensual Pleasure.
3. Primary Organic Propensions—Appetites.
4. Primary Animal Propension—Spontaneous Activity (unselective).
5. Love of Gain (reflective derivation from Appetite).
6. Secondary Affections (sentimental indulgence of sympathetic feelings).
7. Primary Passions—Antipathy, Fear, Resentment.
8. Causal Energy—Love of Power, or Ambition; Love of Liberty.
9. Secondary Sentiments—Love of Culture.
10. Primary Sentiments of Wonder and Admiration.
11. Primary Affections, Parental and Social—with (approximately) Generosity and Gratitude.
12. Primary Affection of Compassion.
13. Primary Sentiment of Reverence.

HIGHEST.

certainly conceive, for the most part, as falling short of complete exclusion of the lower motive.

I may illustrate by reference to the passion of resentment of which I before spoke. The view of reflective common sense is, I think, that the malevolent impulse so designated, as long as it is strictly limited to resentment against wrong and operates in aid of justice, has a legitimate sphere of action in the social life of human beings as actually constituted: that, indeed, its suppression would be gravely mischievous, unless we could at the same time so intensify the ordinary man's regard for justice or for social well-being that the total strength of motives prompting to the punishment of crime should not be diminished. But, however much it were "to be wished," as Butler says, that men would repress wrong from these higher motives rather than from passionate resentment, we cannot hope to effect this change in human beings generally except by a slow and gradual process of elevation of character: therefore—to come to the point on which Dr. Martineau appears to me to be at issue with common sense—supposing a conflict between "Compassion," which is highest but one in Dr. Martineau's scale, and "Resentment," which he places about the middle, it is by no means to be laid down as a general rule that compassion ought to prevail. We ought rather—with Butler—to regard resentment as a salutary "balance to the weakness of pity," which would be liable to prevent the execution of justice if resentment were excluded.

Or we might similarly take the impulse which comes lowest (among those not condemned altogether) in Dr. Martineau's scale—the "Love of Ease and Sensual Pleasure". No doubt this impulse, or group of impulses, is continually leading men to shirk or scamp their strict duty, or to fall in some less definite way below their own ideal of conduct; hence the attitude habitually maintained towards it by preachers and practical moralists is that of repression. Still, common sense surely recognises that there are cases in which even this impulse ought to prevail over impulses ranked much above it in Dr. Martineau's scale; we often find men prompted—say by "love of gain" or "love of culture"—to shorten unduly their hours of recreation; and in the case of a conflict of motives under such circumstances we should judge it best that victory should remain on the side of the "love of ease and pleasure," and that the unseasonable intrusion of the higher motive should be repelled.

Perhaps it may be said that in neither of these instances would the conflict of motives remain such as I have described: that though the struggle might begin, so to say,

as a duel between resentment and compassion, or between love of ease and love of gain, it would not be fought out in the lists so marked out; since still higher motives would come in in each case, regard for justice and social well-being on the side of resentment, regard for health and ultimate efficiency for work on the side of love of ease; and that it would be the intervention of these higher motives that would decide the struggle so far as it was decided rightly and as we should approve. This certainly is what would happen in my own case, if the supposed conflict were at all serious and its decision deliberate; and it is for this reason that such a scale as Dr. Martineau has drawn up, of motives arranged according to their moral rank, can never, in my view, have more than a very subordinate ethical importance. It may serve to indicate in a rough and general way the kinds of desires which it is ordinarily best to encourage and indulge, in comparison with other kinds which are liable to compete and collide with them; and we might perhaps settle, by means of it, some of the comparatively trifling conflicts of motive which the varying and complex play of needs, habits, interests, and their accompanying emotions continually brings forth in our daily life. But if a serious question of conduct is raised, I cannot conceive myself deciding it morally by any comparison of motives below the highest: the case must, as I have elsewhere said,[1] be "carried up" for decision "into the court" of the motive which I regard as supreme—*i.e.*, the desire to promote universal good, understood as happiness of sentient beings generally. Thus the comparison ultimately decisive on the particular question raised would inevitably be not a comparison between the motives primarily conflicting, but between the effects of the different lines of conduct to which they respectively prompt, considered in relation to whatever we regard as the ultimate end of reasonable action. And this, I conceive, is the course which moral reflection will naturally take in the case not only of utilitarians, but of all who follow Butler in regarding our passions and propensions as forming naturally a "system or constitution," in which the ends of lower impulses are subordinate as means to the ends of certain governing motives, or are comprehended as parts in these larger ends. So far as any view of this kind is taken, any tabulation of the moral rank of motives other than the governing ones can, at best, have only a quite subordinate interest: it cannot possibly furnish a method of dealing with the fundamental problems of ethical construction.

[1] *Methods of Ethics*, bk. iii., ch. xii., p. 3.

III.—PSYCHOLOGICAL PRINCIPLES. (III.)

By James Ward.

Attention and the Field of Consciousness.

In resuming, after a long interval,[1] this attempt to define and explicate the principles of general psychology, the writer feels bound first of all to consider certain objections urged by Prof. Bain in the last number of Mind to some of the positions already taken up. Though Prof. Bain's very generous criticisms refer directly to an article that has appeared elsewhere, yet in one chief point at least his strictures apply equally to what has been said here. The point in question is everywhere the peculiar stress "laid on Attention" and "the immense compass assigned to the word". It is then first a question of fact and next a question of terms.

Prof. Bain also cites Mr. Bradley's discussion in an earlier Number (43) of the question: "Is there any special Activity of Attention?" as containing "conclusions on the whole remarkably just," and which therefore, it may be supposed, he regards as a further refutation of the doctrine of the present writer with which he had just been dealing. The "very great acumen" of this discussion of Mr. Bradley's is unmistakable, and he would be a foolishly confident man who had no misgivings on finding a thinker of such subtlety and independence dissenting from him. But against whom is this discussion directed? Certainly it has but little relevance as against the position to be here expounded and defended, though it may serve incidentally to make that position clearer; for such purpose perhaps the reader will be kind enough to look back to it occasionally.

One or two preliminary considerations may serve to clear the way and, by showing the steps through which the writer came to lay this peculiar stress on Attention, enable the reader the better to judge whether the leading was that of truth or error. Everyone the least familiar with the history of modern knowledge must have remarked the influence of the more exact sciences upon the science of mind and upon philosophy generally. For Descartes and Spinoza mathematics was the model; for Leibniz, and still more for Kant,

[1] See Mind viii. 153, 465.

the model was physics. Since Kant's day the science of physics has made great strides; and a new science, biology, has come into being: from both—at least in respect of method—the psychologist has much to learn. To be more specific—we have first the modern doctrine of energy with the theory of dimensions, and we have next that hypothesis which has entirely transformed our conceptions concerning organised life, the hypothesis of evolution. Also we may say generally that the problem of psychology is twofold: (1) to analyse the facts of mental life, and (2) to ascertain the course and conditions of mental development.

It is especially in dealing with the second problem that the biologist inspires us to attempt a wider range and to take a larger view. We see him refer all the varied types of life to a few simple forms; the differentiation of organs, in the highest and lowest alike, to changes in two or three primitive germinal layers; while their several physiological functions are traced back to the fundamental properties of protoplasm, such as contractility, irritability, &c. Now what seems desirable in psychology is an equally generalised analysis of the broad facts we include under the term a mind—'a mind,' and not the stuff or substance which dualistic philosophers oppose to that other stuff they call matter. But in trying to take a hint from the biologist we come at once upon a difficulty. He can see his simplest creature, the amœba, manifest the several vital functions; he can see the impregnated ovum segment, differentiate its primitive layers and develop stage by stage; he can range the leading types of the animal or vegetable kingdom in their appropriate order before his eyes. The psychologist can do nothing at all of this kind directly, and only very little indirectly. He cannot analyse the simplest forms or stages of consciousness and note the progressive advance from these to higher. He is sure beyond all serious doubt that mind and nervous organisation are concomitant, much, for example, as colour and wave-length are. But still a given nervous development is scarcely more a clue to the mind that corresponds than the wave-length of violet, as compared with that of red, is a clue to the difference of sensation that accompanies retinal excitation by these waves. As far as direct acquaintance goes the psychologist is confined to the most complex form of mind, and that in its maturity. His observation of himself, supplemented by like observations on the part of others, have made possible a certain objective knowledge of the human mind, which, broadly speaking, is as plain and as verifiable as other depart-

ments of empirical knowledge.[1] But where intercommunication is out of the question, and where the physical life and conditions are widely different from our own, we are left to more or less probable conjecture. Till we have correlated the form of mind we do know to its nervous organisation, it seems hopeless to attempt inferences concerning the minds of the lower animals on the basis merely of what we know of their comparative anatomy. The psychologist who essays to treat mind evolutionally has to begin at the top of the chain and work downwards; he cannot, like the biologist, begin at the bottom and work upwards. The problem for him is in large measure an inverse problem and beset with many of the characteristic difficulties of such a method. His one chance of anything like scientific exactness lies in securing first of all an accurate and complete general analysis which shall tally, as far as the nature of the case admits, with what has been independently ascertained of the anatomy and physiology of the nervous system. And it is in this part of his work that he has much to learn from the modern physicist.

It is a mistake to suppose that all the exactness of modern physics is due to measurement, and to suppose accordingly that psychology can never be rendered exact till it becomes psychometry. In one important respect physics is exact even where concrete quantitative determinations may be impracticable; that is to say, the dimensions of a quantity may be known even when its numerical magnitude is not. All physical quantities that are not simply lengths, times or masses are expressible in terms of these fundamental units, and every equation that claims to *have a physical meaning* must involve only like dimensions of these units as far as it involves them at all. We cannot, *e.g.*, equate so much momentum with so much energy any more than we can so much length with so much area. Any equality that is true of two physical quantities must obviously remain true whatever be the unit of measurement employed; but then the dimensions must be the same, else a change of unit will unequally affect the numerical value of the two quantities. But further prolixity would be unpardonable in what is only meant to serve as an illustration: it is time to turn to the point to be illustrated. A physicist never confounds velocity and acceleration, since they have different dimensions in time; or energy and work,

[1] It is a stupid confusion to represent this knowledge as 'subjective' in the sense of being true only of a *sui generis* M or N; as if there were no human kind.

since they have different dimensions in length. But psychologists seem to be aware of no confusion when they talk indifferently of states of mind, contents of mind, acts of mind; treat the same fact now as a process, now as a product; and range on one level feelings which presuppose presentations and acts which presuppose feelings. Some of the most striking instances of what might be called by analogy this arbitrary change of systematic units are to be found in Sir W. Hamilton's writings.[1] But probably all psychological writing, even the clearest, is marked by this varying use of terms involving incompatible complications and by surreptitious changes of standpoint; as if, for example, one should attempt to compare a quantity of electricity measured by one system of units with a quantity of heat measured by another, or try to find the locus of a curve the ordinates of which have no common origin. If then we take an example from Prof. Bain himself it will be because it is one which also seems to further the main purpose of this paper. With this view let us examine his general analysis of mind:[2]—

"The only account of mind strictly admissible in scientific psychology consists in specifying three *properties* or *functions*—Feeling, Will or Volition, and Thought or Intellect. . . . FEELING includes all our pleasures and pains, and certain *modes of excitement* or *consciousness simply* that are neutral. . . . The two leading divisions of the feelings are commonly given as Sensations and Emotions (p. 2). . . . A Sensation is defined as the *mental impression, feeling or conscious state* resulting from the action of external things on some part of the body, called on that account sensitive (p. 27). . . The emotions, as compared with the sensations, are secondary, derived or compound feelings (p. 226). WILL or VOLITION comprises all the *actions* of human beings in so far as impelled or guided by Feelings. . . . THOUGHT, INTELLECT, Intelligence or Cognition includes the *powers* known as Perception, Memory, Conception, Abstraction, Reason, Judgment and Imagination. It is analysed, as will be seen, into three functions, called *Discrimination* or Consciousness of Difference; *Similarity*, or Consciousness of Agreement; and *Retentiveness*, or Memory" (p. 2).

Now this is substantially an unimpeachable account of the broad facts of mind, and yet the moment we scrutinise the logical implications of the terms here singled out by italics, their want of precision becomes unmistakable. At the outset we are told of three properties or functions of Mind, as if there were no difference between predicating property and function; whereas, as soon as we raise the question, we become aware that while everything has properties, functions —unless metaphorically employed—pertain only to agents.

[1] Cp. instances previously given in MIND viii. 476, note.

[2] The references, unless otherwise stated, are to Prof. Bain's *Mental and Moral Science.*

If Mind is to be viewed as having functions it must be viewed as an agent. When we look for a description of the three functions, we find in each case that an enumeration is given us instead, and that the facts enumerated are ranged under three different categories. Feeling[1] *includes* certain impressions, *states* or modes of excitement; Will *comprises* certain *actions*, and Intellect *includes* certain *powers*. Now states, actions and powers are certainly not congruent conceptions: a state or an impression is not a function, though to receive an impression or to change a state may be; a function again is not an action, but the performance of an action, and even powers are not functions though necessarily presupposed in them. Let us descend to further detail.

There is an immense advance on his Scottish predecessors in Prof. Bain's analysis of Intellect into the three functions of Discrimination, Similiarity and Retentiveness, instead of the old medley of "powers known as Perception, Memory, Conception," &c., &c. But it must strike anybody who has any sense of the import of suffixes, that discrimin*ation*, simil*arity* and retent*iveness* have, so to say, very different logical 'dimensions'. Hamilton, though he could not get on with less than six intellectual faculties, did at least contrive to make them all *-ives*. Prof. Bain could, of course, easily have used the terms Discrimination, Assimilation, Conservation, or the like, if he had chosen; and these terms are all of the general form SPO.[2] But there is a reason why this even and explicit indication of transitive activity is avoided or missed: it is not from any sentimental antipathy to speculation or any anti-theological bias—these are matters that do not trouble a psychologist who 'keeps his eyes in the boat'. The reason lies rather in the ambiguity of the term consciousness, which occurs once and again in the exposition. As Prof. Bain has himself pointed out, the proper meaning of conscious state or state of consciousness is "mental life as opposed to torpor or insensibility; the loss of consciousness is mental extinction for the time being" (Appendix, p. 93). But if this be the proper meaning of consciousness, it seems obvious that one is guilty of a sort of fallacy of division in calling a sensation, *e.g.*, a conscious state. We might as well resolve a man physically into an aggregate of smaller men (like Hobbes's Leviathan), as call each and all of the

[1] It is one of the many grievous defects of our English nomenclature that we have no word which, like the German *Das Gemüth*, runs naturally on all-fours beside Will and Intellect.

[2] See former paper, MIND, viii. 468, note.

objects or contents of his consciousness conscious states or states of consciousness. Further, although at the outset Prof. Bain has distinguished Feelings as made up of *states* from Intellect which consists of *powers*, yet he passes by an easy transition from discrimination to a "consciousness of difference," and then to a "*feeling* of difference"; by similar stages his second intellectual function becomes "the conscious state arising from agreement in the midst of difference" (pp. 82, 83). Nobody confounds painting with pictures or singing with songs, yet here we have just such a confusion of the activity implied in consciousness with the objects or products of that activity. Nay, in some sort the case is even worse. When we are told that as intellectual the mind discriminates, we expect to find that, apart from this activity, the "states" of which it is conscious are not discriminated. But presently we see the tables turned: the function seems now to belong to the "states," and not to whatever is conscious of the states: the singing arises from the song, and not the song from the singing. True, intellect is not creative, but only, as the word implies, selective: it can only differentiate where there is difference and assimilate where there is similarity. Every process presupposes appropriate material; but the process is more than the material for all that. Here we have process, material and product continually confused, because all alike are styled states of consciousness. Nothing hides so effectually as familiarity: once committed to this one term, therefore, it is small wonder if the constant element, the activity implied in 'conscious,' the 'I think' which, as Kant said, must be conceived as accompanying all my presentations, should drop out of sight, and the relations established among presentations should come to be regarded as the direct outcome of their interaction. We are then at the other pole. In place of a subject conserving or retaining its presentations, we have these, under certain circumstances, "tending to grow together or cohere" (p. 85); and instead of this subject comparing its presentations and connecting them, we have these, whenever they recur, "tending to revive their like among previously occurring states" (p. 127).

In his doctrine of the Will Prof. Bain advances if anything still more upon his predecessors: *e.g.*, in singling out movements as a characteristic class of presentations, in emphasising the connexion of movement with feeling, and tracing the growth of voluntary power step by step as ideation advances. For all that, there seems here also the same inevitable confusion due to an inexact terminology and an

imperfect analysis of the leading term consciousness. An action, according to Prof. Bain, is a muscular movement, actual or ideal (p. 342), by which, of course, we are to understand not a muscular movement as outwardly observed whether by the agent or by others, but "muscular consciousness, a series of modes of expended energy which the memory can retain, and which we can associate with other mental states" (p. 25). A movement then, psychologically regarded, is, Prof. Bain allows, a presentation or mental state admitting of conservation and association like any other. Again, voluntary actions, as we have seen, are all the actions of human beings in so far as impelled or guided by feelings, and feelings also are presentations or "mental states" admitting of conservation and association. Now what is "the link between feeling and action"? Apparently the feeling (p) impels or guides the human being (M or N), whereupon the human being is conscious either of (κ) expending energy, or of (κ') energy expended, in (k) muscular movement. It is to be noted that certain entirely new elements enter here. The feeling (p) as such is a "mental state"; but, to say nothing of the change of category which the attribution of the power to impel and even guide implies, the impulsion or guidance of the human being is a fact extraneous and additional to the mere presentation (p). Similarly, though less clearly, in the case of the resulting action. To admit of conservation and association a presentation must have a certain individuality, such as pertains, *e.g.*, to a movement of hand or eye or tongue: this has been denoted above by k. But no such individuality pertains to the expenditure of energy in producing k.[1] What then are we to say of this common fact of expenditure of energy present in all the several modes of our varying muscular consciousness? It is scarcely enough to say there is consciousness of energy expended (κ'), implying thereby that such consciousness is a receptive state. So regarded κ' would go for nothing: there would be the presentation of k and no

[1] There is sufficient analogy between the psychical and the physical to make it worth while to cite by way of illustration the following passage from Clerk Maxwell's admirable little tract, *Matter and Motion*:—"We cannot identify a particular portion of energy or trace it through its transformations. It has no individual existence, such as that which we attribute to particular portions of matter. The transactions of the material universe appear to be conducted, as it were, on a system of credit. Each transaction consists of the transfer of so much credit or energy from one body to another. . . . The energy so transferred does not retain any character by which it can be identified when it passes from one form to another" (Art. cix.—"Energy not capable of Identification").

more. We seem then shut up to κ, if "muscular consciousness" is to have any special characteristic, that is to say, the human being (M or N) is not only conscious of k but conscious of producing it. This twofold relation of the human being to the two states, *viz.*, the feeling that impels and the movement that results, is one we must keep in sight, while we turn to Prof. Bain's own account of "the link between feeling and action".

"At the outset," he says, "there happens a coincidence purely accidental between a pleasure and a movement (of Spontaneity) that maintains and increases it, or between a pain and a movement that alleviates or removes it; by the link of Self-conservation, the movement bringing pleasure or removing pain, is sustained and augmented. Should this happen repeatedly, an adhesive growth takes place, through which the feeling can afterwards command the movement" (p. 325). In other words:—At the outset *a* pleasure (say p) and *a* movement (say k) are presented together by chance and "after a few returns of the favourable accident the two are connected by an associating link" (p. 81). Now what is the difference in Prof. Bain's view between the feeling "commanding" the movement and the feeling "being associated with" the movement? The implications of the two phrases are widely different; and yet it looks as if we were to understand that, when an "adhesive growth" has taken place between a feeling p_1, and a movement k_1, between a feeling p_2 and a movement k_2, and so on, we have then and there a "matured will". Still it must not be forgotten that "the distinctive aptitude of the mature will is *to select* at once the movements necessary to *attain* a pleasure," &c. (p. 325). Let us turn to some passage in which Prof. Bain formulates "the law of Self-conservation"; for there, if anywhere, we ought to find this link—outside and above mere associating links—which is "requisite" to connect feeling and action as distinct from particular sensations and movements. The following is as explicit as any:—"A state of pleasure, by its connexion with increased vitality in general, involves increased muscular activity in particular. A shock of pain, in lowering the collective forces of the system, saps the individual force of muscular movement" (p. 322). Here in addition to particular ps and ks we have "vitality in general" or "the collective forces of the system" as a new factor intervening between them; and this is our "human being": not a self in any psychological sense, but only an organism. If we are to avoid this confusion between the individual organism and the conscious subject who is

impelled or guided, who selects and controls, we must insist on being told the psychological equivalent of "vitality in general" or "the collective forces of the system".

But it will be best to scrutinise a little further the terms which Prof. Bain uses in speaking of feelings and movements; to do this will be tantamount to examining the terminology he uses of his first class of mental facts. The same confusing change of 'dimensions' and standpoints meets us here again. First of all we are told that Feelings (F_1) divide into primary or Sensations (with muscular feelings) and secondary or Emotions, in which sensations have coalesced with one another and with ideas. But again we are told that "Feeling (F_2) comprehends pleasures and pains and states of excitement that are neither" (p. 215). Now what connexion is there between these quite distinct classifications? Pleasures, pains and states of neutral excitement cannot be sensations, for then they would have to be referred to a definite sense-organ, according to the definition we have had of sensation; and they would not then cover emotions, for in these "the simple elements cease to be apparent". Moreover it seems possible to talk of "the pleasures and pains of sensations" and of "the feelings connected with emotions," and generally of "the emotional character of feeling". Thus a feeling being a conscious state, a feeling of a feeling must be a conscious state of a conscious state. It is a familiar law in symbolic logic that $x^n = x$, square square is square, the red of red is red, &c.; but this law of simplicity will not hold of relations generally. A reader entirely ignorant of the subject-matter might then reasonably suspect that F_1 and F_2 refer to different things, and are not merely a different statement of the same. This difference would clearly appear on a careful comparison of (1) passages in which Prof. Bain speaks of Pleasure, Pain or Indifference or *the* state of pleasure, *the* state of pain, &c., with (2) passages in which he speaks of *a* pleasure, *a* pain or of pleasurable and painful sensations and emotions, &c. But we have no space for so much detail. What it comes to is simply this: F_1 answers to presentations which a subject may be conscious of or attend to, while F_2 is the state or mode of excitement of this subject that results: F_1 is what the subject cognises, F_2 is how he feels. It is only with reference to F_1 that Prof. Bain can talk of "the intellectual character of feeling," and only with reference to F_2 that he can talk of "the volitional character of feeling". This brings us to the other class of presentations, "muscular feelings," as to which, under cover of the unanalysed

term "muscular consciousness," we have found a similar distinction between the particular *k*s, which are presentations, and "the consciousness of energy put forth" in actualising these. Now, when explaining the volitional character of feeling, Prof. Bain no longer speaks of associative links between a feeling *p*, (*i.e.*, an instance of F_1) and a movement *k*, nor even of this feeling commanding the movement. But he tells us "The Will is moved by the feelings; pleasure causing pursuit and pain avoidance"—feelings being here plainly F_2. It is also plain that Will does not in this passage mean a sum of movements, but rather the subject that is conscious of making these movements, or of acting voluntarily, *i.e.*, under the influence of feeling consequent on, but distinct from, the mere presentations that make him feel.

To sum up: the contention is that Prof. Bain's exposition of the general features of mind involves substantially the same analysis as that made by the present writer,[1] but that the wavering and uncertain connotations of such terms as consciousness, feeling, will, volition, state, act, activity and the like have rendered any clear issue impossible. If we had any satisfactory system of expressing the varying implications of these abstract conceptions, much as physicists, *e.g.*, can express in terms of three fundamental units the dimensions of the quantities with which they deal, psychology would become comparatively plain sailing, though still beset with more difficulties than biology has to face.

Now let the reader imagine himself trying to deal *more physico* with the broad facts of mind as manifested throughout the entire range of animal life, — not as Prof. Bain does, only with "human knowledge, experience or consciousness,"—and it will not be long before the contrast of subject and object presents itself as fundamental. We can often form a distinct conception of the relation between two terms when we have no such distinct conception of the terms themselves. So here: without waiting to examine ontological theories we can ask how subject and object are related. We say of man, mouse or monkey that it feels, remembers, perceives, infers, desires, strives and so forth. Leaving aside the first term, which is ambiguous, it is obvious that all the rest imply activity and an object. The question then arises as to the possibility of resolving these instances and others like them into a form in which the diversity of the act appears as a diversity of the object. It

[1] See MIND, viii. 484.

is certain that the objects are different: thus in perception, *e.g.*, we deal with impressions, and in memory and imagination with ideas. It will therefore be a simplification if in place of a distinction of faculties as well as a difference of object we find a difference of object alone sufficient. The still wider difference between cognitive and conative acts—*i.e.*, between the intellectual and active powers of the older psychologists—seems to admit of similar reduction, when, taking the simplest cases of each, we remark that the objects of the one are sensations and those of the other movements. Supposing, then, there should prove to be an underlying sameness in all the variety of psychical acts, what is it? Starting from common language, there seem but two terms that could possibly denote this common element—Consciousness and Attention. The former is soon disposed of: in spite of its properly active signification, we have seen that it is frequently used in a passive sense, and when actively used its meaning is as often too wide as too narrow, ranging between the whole extent of the facts to be analysed and one of the most specialised of these, what we otherwise call internal perception, reflection, and less accurately self-consciousness.

Attention, on the other hand, has invariably an active sense, and there is an appropriate verb, to attend. Moreover, the figure involved, that of stretching or bending in some direction, while happy as a figure, does not, like 'conscious,' surreptitiously introduce what has to be analysed as itself an ultimate term of the analysis.[1] The objection to Attention is that it is too narrow: many things are presented, but few are attended to. If attention is to be made co-extensive with consciousness, the vital distinction between attention and inattention is lost, and it is but an ill way to advance knowledge to rob "the central word of discipline" of its essential meaning. But on the other side it may be urged that even in common parlance this is not the only use of the word; there is a generic sense of attention recognised as well. "'Attention' in the school and the army" is also known as a *concentration* of attention, and its absence as *relaxing* or *remitting* attention. As ordinarily used, then, attention implies a covert comparison; in other words, implies several degrees of attention in the wider sense. The pro-

[1] Any one curious to see some of the confusions resulting from this διάλληλος λόγος cannot do better than glance at the note "On Consciousness: its Conditions and Limitations" in Hamilton's edition of *Reid*, p. 933.

posal to use it absolutely or in this wider sense is very much like the proposal to use 'magnitude' or 'heat' (*i.e.*, temperature) in such fashion. Many an unsophisticated old lady would demur to one who described the minuteness of a snow crystal in terms of magnitude or its temperature as so many degrees of 'heat' (reckoning from absolute zero). What has been found necessary in these physical matters seems necessary here, and it will be as easy to get accustomed to the absolute sense in the one case as in the other. Fortunately Prof. Bain goes a long way towards admitting the want. "I make the fullest allowance," he says, "for the need of a general word to express the reaction of the Subject upon presentations," &c.; and he suggests "a still more general designation such as 'mental *tension*' or 'conscious *intensity*'." In both the root of attention is there; but if the remarks already made on what might be called the relationality of terms have any force, it is obvious that mental tension and conscious intensity cannot be equated to each other, and can neither of them express the reaction of the subject upon presentations.

But though Prof. Bain has nothing better to suggest, he animadverts none the less severely on the rashness and the presumption of the change proposed. "Before we bring forward a change in scientific nomenclature," he says, "we ought first to show that it is wanted, and next take the measure of our own influence or persuasive power for getting it adopted." As to the last, the writer is perfectly well aware that his personal influence is *nil*. So far as the advancement of knowledge goes, he is not, and never wishes to be, a person at all; but that the change in question is wanted he thinks he has done something to show. And after all it is not nearly so violent a change as Prof. Bain imagines. The recognition of all degrees of attention in everyday life has been referred to already. The following from Locke is also very much to the point :—

"*The various attention of the mind in thinking.* . . . That there are ideas, some or other, always present in the mind of a waking man, everyone's experience convinces him; though the mind employs itself about them with several degrees of attention. Sometimes the mind fixes itself with such intention[1] . . . . that it shuts out all other thoughts and takes no notice of the ordinary impressions made on the senses; . . . . at other

[1] In an earlier paragraph Locke distinguishes "intention or study" from mere attention: in the former the mind resists the solicitation of other ideas, in the latter such ideas as offer themselves are taken notice of as they pass; in fact, it is attention as it is in the school and the army, that Locke here calls intention.

times, it barely observes the train of ideas that succeed in the understanding without directing and pursuing any of them; and at other times, it lets them pass almost quite unregarded, as faint shadows that make no impression."—*Essay concerning Human Understanding*, ii. 19, sec. 3.

The last sentences of the next paragraph (sec. 4) are also interesting:—

"Since the mind can sensibly put on, at several times, several degrees of thinking [obviously here equivalent to attention in the section above], and be sometimes, even in a waking man, so remiss as to have thoughts dim and obscure to that degree that they are very little removed from none at all, and at last, in the dark retirement of sound sleep, loses the sight perfectly of all ideas whatsoever . . . I ask, whether it be not probable that thinking is the action, and not the essence of the soul? Since the operation of agents will easily admit of intention and remission; but the essences of things are not conceived capable of any such variation."

Locke then came very near indeed to a full and explicit recognition of attention in the sense which Prof. Bain scouts as an unwarranted change of nomenclature. But Hamilton comes nearer still; and could he but have freed himself from the trammels of the old Scottish psychology the change of nomenclature which is here defended might have been made under better auspices and long ago. The following passages from his *Lectures on Metaphysics* may be put in as evidence:—

"But to view attention as a special act of intelligence, and to distinguish it from consciousness, is utterly inept . . . we might, with equal justice, distinguish in the eye the adjustment of the pupil from the general organ of vision, as, in the mind, distinguish attention from consciousness as separate faculties. Attention is consciousness and something more . . . it is consciousness concentrated (i. p. 237). . . . It therefore appears to me the more correct doctrine to hold that there is no consciousness without attention—without concentration—but that attention is of three degrees or kinds. The first, a mere vital and irresistible act; the second, an act determined by desire, which, though involuntary, may be resisted by our will; the third, an act determined by a deliberate volition. An act of attention . . . seems thus necessary to every exertion of consciousness . . . [but] the mere vital or automatic act of attention has been refused the name; and *attention*, in contradistinction to this mere automatic contraction, given to the two other degrees, of which however Reid only recognises the third. . . . The faculty of attention is not, therefore, a special faculty, but merely consciousness acting under the law of limitation to which it is subjected" (i. 248).

That a writer for whom attention is only consciousness contracted or limited, and consciousness without such contraction or limitation is consciousness no longer, should find it needful to talk both of acts of attention and exertions of consciousness, is but one more proof of the perturbing influence of a bad terminology. Locke, who wrote before consciousness had been allowed to run wild over the whole

field of psychology, found the one action of attending or thinking sufficient. Between attentive consciousness and inattentive consciousness or consciousness simply there is, it is maintained, only a difference of degree. If we say that consciousness is an act and must have some intensity, that the more it is concentrated on some objects the more it is withdrawn from others, then this difference of degree is traced to a difference of distribution: the more we intensify our hold on A, the more we must relax our hold on B; but between the intension and the remission there is perfect continuity, and not a difference of kind. The act is one, and it is only in its relation to its effects on A and B that we are tempted to resolve it.

But it is not enough to contend that if there is one common factor in all psychical activity this factor is attention; to make out a case it is necessary to show directly that all the various faculties with which a mind can be endowed are resolvable into powers of attention and various classes or relations or states of presentations. In particular it is desirable to show that volition as well as intellection, about which there will be less question, is such a case. This has been attempted already in the second of the two former articles, but perhaps a brief re-statement in a somewhat different form may conduce to clearness. In as far as volition implies not merely action overt or intended but determination, whether by motives or in spite of them, in so far also it contains an element not resolvable into attention to motor presentations. This farther element, in fact, is that which Prof. Bain describes as "the volitional character of feeling": having once noted its presence, we may now leave it aside. Apart from the direct spring of action, then, the question is whether action in process is anything more than attention to a special class of objects. To depart as little as may be from current usage and to avoid Prof. Bain's charge of presumptuous meddling with the sacred ark of words, the question may be put in this fashion: Are apperception and innervation reducible to one (attention)? First of all, it is noteworthy that they have the same characteristics. Thus what Hamilton has called the law of limitation holds of each alike and of either with respect to the other; and it holds too not only of the number of presentations but also of the intensity. We can be absorbed in action just as much as in intuition or thought; also movements, unless mechanical, inhibit ideas, and *vice versâ* ideas other than associated trains arrest movements. It is as impossible to lift a heavy weight and go on thinking as it is to

scrutinise the dot on an *i* and go on thinking. Intoxication, hypnotism or insanity, rest or exhaustion, tells on apperception as well as on innervation. The control of thoughts equally with the control of movements requires "effort"; and, as there is a strain peculiar to intently listening or gazing, which is known to have a muscular concomitant, so too there is a strain equally characteristic of recollection and visualisation, which may quite well turn out to be muscular too. When movements have to be associated the same continuous attention is called for as is found requisite to associate sensory impressions: when such associations have become very intimate dissociation is about equally difficult in both cases. The process of control is also, so far as we yet know, much the same: it is a process of direct repression or of alternative intensification, or a combination of both. One real difference there is, no doubt: movements ensue either through the withdrawal of inhibition or through a concentration of attention on the idea of the movement. The like, it need hardly be said, does not hold of sensations; though in abnormal cases there is an indefinitely close approach to it. "If *ifs* and *ans* were pots and pans there'd be no trade for tinkers" —nay, more, there'd be no trade for movements of any sort, except so far as these were pleasurable in themselves. It is just this difference in the objects that makes all the difference in our attitude, but it is not a difference in the psychical activity concerned with them.

There is further a supposed difference between apperception and innervation, or rather between what are assumed to be their physiological concomitants, which has stood in the way of their identification. Apperception is assumed to be related to afferent nerve-currents; and innervation, on the contrary, to efferent currents. Prof. Bain complains that in the article he criticises no notice is taken of this position. It is true no notice was taken, and for what seemed to be good reasons. In the first place, it is not a matter that concerns psychology proper at all. When psychologists as such are sure of their facts and neurologists in like manner sure of theirs, we may expect a great advance of knowledge from careful endeavours to correlate the two. A hopeful beginning has indeed already been made; but meanwhile the most disastrous confusion has befallen the more difficult inquiry through plausible but hasty interpretations of unverified physiological hypotheses. Psychologically we know nothing of nerve-currents, whether afferent or efferent. But in the next place, it is, to say the least, extremely questionable whether muscular efforts are the concomitant of what

Prof. Bain calls motor currents, and not rather of certain afferent excitations.[1] In any case it is not with these presentations, which accompany thinking and acting alike, but with effort in a still narrower sense that we are here concerned. It often requires more effort to make a slight exertion than a great one, much as it may require more effort to hear a faint sound than to hear a loud one. In this sense of mental effort or concentration, if one might venture a physiological guess on the strength of psychological data, it may turn out that both in apperception and in innervation the nerve-currents are what Prof. Bain calls motor, whether their function be comparable to that of accelerator, or to that of inhibitory, nerves, or to those of both.

There is one striking fact that brings to light the essential sameness of apperception and innervation which is cited by Wundt[2] for this very purpose. In reaction-time experiments it is found that if a signal precedes the impression to be registered by a suitable interval the reaction registering the impression is often instantaneous; the reaction-time, in other words, is *nil*. In such a case the subject is aware not of three separate acts, (1) apperceiving the impression, (2) reacting to it, (3) apperceiving the effect of the reaction, but is distinctly conscious of one act and one only. The anticipatory idea of the impression to be perceived and the idea of the movement to be executed are so adjusted that, when the preliminary signal is given, the impression is realised and the movement actualised at once and together. Wundt call this relation of the two ideas a "simultaneous association": the expression is scarcely a happy one, but at least the adjustment brought about is like an association, in so far as the two ideas are attended to as one complex.

It is a matter of quite secondary importance what name we give to this common element of activity present wherever we find consciousness or sentience. Provided the fact be recognised we shall not be long without an appropriate name for it. Meanwhile to call it 'attention' seems to do least violence to existing usage, and to have most precedents in its favour. The really important question is whether the contrast of Subject and Object is of such a fundamental character as to justify the resolution of psychological facts into two

[1] See on this the classic paper of Prof. W. James in *Anniversary Memoirs of the Boston Society of Natural History*, of which a brief summary will be found, MIND, v. 582; also Ferrier, *Functions of the Brain*, 2nd ed., pp. 382, ff.

[2] *Physiologische Psychologie*, ii. 239, 391.

entirely distinct categories—the one subjective faculty or function of Action-under-Feeling or Consciousness on the one side, and a Field of Consciousness, consisting of Objects, Ideas or Presentations, on the other. The older psychologies, with their legion of faculties, were no doubt unscientific, just as were the older physics with their legion of forces. But modern physicists have not abandoned the old conception of force altogether: they have only transformed it into the exacter conception of Energy. There is, however, a difference between psychology and physics that deserves notice, and to this we must turn for a moment.

The most important generalisations in psychology—as probably everybody will allow—are those included together as the Laws of Association. But these admit of a still more general treatment as the Laws or Theory of Presentations, under which head might be brought together the important results obtained by our own Associationist school and the equally important contribution of the Herbartian psychologists which are largely the complementary of ours. Now it was the Associationist psychology which in England gave the death-blow to the Scottish school with its interminable faculties; and a like fate befel the "*alte Vermögentheorie*" at the hands of the Herbartians in Germany. In this now dominant psychology of presentations—"*Psychologie ohne Seele*," as Lange calls it—we are led to recognise only interaction of presentations *inter se:* ideas tend to attract or repel each other; they associate and they conflict: in short, as Herbart roundly put it, we have in them a psychical statics and dynamics, and these, as he thought, admit of a mathematical treatment. The activity underlying the old terms 'faculty,' 'power,' &c., which was formerly referred to the subject, here reappears on the side of the object. Hence then the attempt to explain everything in terms of the interaction of presentations. We have this pushed to the utmost in Herbart's own psychology with that speculative thoroughness so characteristic of the master minds among our Teutonic brethren. It would not be difficult to show that the metaphysical theory of "self-preservation" which Herbart developed makes no material difference to the general character of his psychology as here described. In Prof. Bain and in J. S. Mill the same tendency is apparent, but in them systematic thoroughness is sacrificed to regard for facts, which is said—for better, for worse—to be the peculiarly British trait. Now comes the question:—Can we, provided we credit presentations—or perhaps it will be fairer to say 'ideas,' since presentation in this connexion may be thought to have a treacherous ring—can we, if ideas are credited with certain

mutual attractions, repulsions, associations, complications, &c., &c.—dispense with the postulation of a subject altogether, at least any subject but that very complex idea which is "generated" under appropriate circumstances when ideas are grouped with sufficient distinctness? Whatever our sentimental preferences may be, it is hard to see any scientific objection to such an attempt if only it could succeed. The one question to be asked then is: Can it? Perhaps we shall find an answer to this question in the course of examining the line of argument developed by Mr. Bradley in the article to which Prof. Bain has referred.

As already said, it is difficult to seize the precise point of Mr. Bradley's contention: though avowedly polemical, his article is for the most part in agreement with what are styled the latest results of modern psychology; it is, in fact, very largely but an able restatement of an able note by J. S. Mill (James Mill's *Analysis*, ii. 372-377). Taking attention to mean "predominance in consciousness," whatever it may be besides, Mr. Bradley inquires "how we are able to produce this condition or what is the machinery which effects the production". Now at the outset at all events, that is to say, in the statement of his question, Mr. Bradley tacitly admits the distinction between the conscious subject on the one hand, the "we who are able to produce," and the field of consciousness on the other, in which this or that object may become predominant. Further, a machine, whether simple or complex, is not itself a motive power, but only a means of directing or modifying or economically expending such power. Nobody now-a-days supposes that in producing the predominance at any given moment of any given presentation any special instrumentality is employed distinct from "the working of the ordinary laws of redintegration, blending," &c., or however else it may seem fit to denote the various interactions of objects. Neither, it may be safely said, is any student moderately versed in modern psychology likely to urge the objection that an idea of an idea is not admissible, or to find any difficulty in comprehending that "the idea of myself somehow engaged" will, provided it is interesting—of which more anon—produce its effect in the ordinary way. Where "the mass of psychologists" who ignore all this, or fail to comprehend it, are to be found, is best known to Mr. Bradley.

But now, granting that wherever there is predominance in the field of consciousness there is attention, and conversely; granting too that even the resolve to attend "produces in the common psychological way the means to its realisation," *viz.*, through the idea of self-attending; and granting *à*

fortiori that the like holds of simpler cases;—we have to ask what are the characteristics of an idea that "predominates in consciousness" or "engrosses the mind". A glance at Mr. Bradley's article, or at the pages of J. S. Mill which he cites, will show that the dominating idea, to use Mill's terms, is (1) "highly pleasurable or painful," and (2) "tends, more or less strongly, to exclude from consciousness all other sensations less pleasurable or painful than itself and to prevent the rising up of any ideas but those which itself recalls by its associations". Perhaps for brevity and distinctness' sake we may call the first its *apolaustic* and the second its *dynamic* character. The two are doubtless most intimately connected; the question is—Can they be resolved into one? or, rather, Can the first be reduced to the second? Referring again to our authors, we shall find that, though these two characteristics are frequently confounded, there is always in the first a more or less explicit recognition of the distinction of subject and object. The dominating presentation affects other presentations by its intensity, its alliances, and so forth; it affects the subject by the pleasure or pain it affords. When, *e.g.*, Mr. Bradley speaks of attention as predominance in consciousness, he has the first effect in view; when he speaks of attention as consisting in interest, he has the second; for "what interests," he tells us, "does so by means of pleasure and pain".

There is no meaning in saying that one presentation pleases or pains another presentation, or that the idea of winning the prize interests the idea of running the race. It is however perfectly intelligible to say, as J. S. Mill does, that "becoming a nearly exclusive object of consciousness, it (*viz.*, a pleasurable or painful idea)is both felt with greater intensity and acquires greater power of calling up by association other ideas. There is an increase both in the multitude, the intensity and the distinctness of the ideas it suggests, as is always the case where the suggesting sensation or idea is increased in intensity."

But now how does the pleasurable or painful idea come by this intensity, if we, as for simplicity's sake we may, take its intensity as its dynamic index? This, it must be frankly owned, looks a difficult question. It is matter of common observation that the apolaustic quality of a presentation is largely determined by its intensity; to say, then, that its intensity is due to its apolaustic quality seems like arguing in a circle, or, if not that, is tantamount to identifying the two, as in fact our authors come very near to doing. Before looking for a way out of this difficulty it may be well to remark that there is one obvious consideration that forbids their

identification, *viz.*, the existence of a singular point, or a *point d'arrêt*, in what we may call the feeling-curve, where intense pleasure passes more or less abruptly into intense pain, while the intensity of the presentation continues to increase.[1] The real solution of the difficulty is more probably to be found in the distinction of the receptive and reactive phases of conscious activity,[2] or non-voluntary and voluntary attention, including in this last, spite of the paradox, involuntary attention as well. There is unfortunately much uncertainty in the use of this term 'voluntary'. It is here used in the sense in which Prof. Bain uses it, *viz.*, for all cases of interest, immediate and mediate as well. "The first," as he says, "is the voluntary impulse in its purest, most primitive and perennial aspect; to hug a pleasant idea is as purely instinctive and untaught as anything can be; the higher apparatus of the will—as expressed by resolution, deliberation, purpose—has no part in it" (MIND, xi. 477). J. S. Mill, on the other hand, as the following sentence will show, confines the term voluntary to cases of mediate interest:—"Ideas which are not of themselves so painful or pleasurable as to fix the attention may have it fixed on them by a voluntary act" (*l. c.* p. 373). In so doing he is at one with most earlier writers, and apparently with Mr. Bradley.

It is important to examine carefully the "primitive aspect" of the voluntary impulse, inasmuch as the essential character of volition is more likely to be apparent in it than in "the higher apparatus of the will," where it is overlaid by complications. If this be sound in point of method, it is then worth notice that the primitive outcome of feeling is muscular movement, and we are therefore prompted to inquire whether all volition, that is to say, all voluntary attention, is not of the nature of movement. Prof. Bain comes very near to such a generalisation, which indeed to the present writer seems a sound one, though this is not the place for a detailed array of proofs. But if all voluntary attention is of the nature of movement it will not do to call such movement muscular. It is unfortunate that the term "muscular" has got such a hold on us: psychologically, muscles are as great an impertinence as nerves; we know nothing of either. The common fact in all voluntary action alike seems to be a change in the distribution of attention under the influence of feeling: in the earliest forms of it

[1] Cp. Wundt, *Physiologische Psychologie*, i. 468.

[2] Against this distinction Mr. Bradley is moved to protest, on the ground that "it breaks up the life of the soul and divides it into active and passive factors". Such a travesty of the facts is indeed a short and ready way of disposing of one of the oldest and most obvious distinctions in all psychology.

this change brings about bodily movements, whereby, sooner or later and more or less indirectly, pleasurable sensations are reinforced or prolonged; at a later stage such change seems to lead directly to an increase in the intensity and fixation of some selected portion of the ideational train. As to the bodily movements, these, wherever observation is possible, seem to result from a concentration of attention upon the idea of the movement, or generally upon what the writer has ventured to speak of as the motor continuum. As to the intellectual movements, these seem with equal certainty to result from a concentration of attention upon the second variety of what Mr. Bradley calls the idea of an idea—*viz.*, that "the reality of which is my psychical state as I have this idea" (MIND, xi. 313). But such an idea it is contended is also, psychologically, a motor idea, though its physiological counterpart is almost certainly not in any sense a muscular movement.

But changes in the distribution of attention, it may be objected, are just what we have in non-voluntary attention: these are just the changes that the ordinary psychological law will explain. Precisely; but the distinctive peculiarity of voluntary attention is a change in the distribution of attention *as regards motor presentations*, the effect of which change is a change in the intensity of what were the objects of non-voluntary attention. Unless then it can be said that pleasure and pain are a species of idea, and unless, further, it can be shown that the sequence of movement on feeling is like the sequence of (say) thunder and lightning, a merely physical fact, we must look beyond the psycho-dynamical laws of association, fusion, &c., for an explanation of what the writer has called subjective selection or interest. And if this be so, it is not enough for psychology to recognise no kind of "activity at all beyond the common processes of redintegration and blending" (MIND, xi. 316).[1] How the intensity that presentations have apart from volition is related to that which they have by means of it—how the objective component is related to the subjective, is a hard problem; still there is no gain in a spurious simplicity that ignores the difference.

But there is still one point raised by Mr. Bradley's very acute criticisms which ought not to be left unnoticed. He seems to allow the possibility that a psychical event which

[1] Of course it must not be forgotten that the state of integration and coalition, in which given presentations may exist at a certain stage, is largely the result of previous acts of voluntary attention, though afterwards independent of such acts.

we cannot analyse may be a necessary link in the process of attending, but maintains that we have still no warrant for such a supposition; because at the stage where activity "is recognised and is felt as such we can see at once its composite character". Thereupon he proceeds to ascertain the conditions under which this recognition of activity arises. On all this there is only space for three brief remarks. First, it is misleading to apply the phrase "psychical event" to attention if attention is an unanalysable element in every psychical event. It is obviously impossible that what is a constituent in every psychical event can be explicable in terms of psychical events, and the demand for such an explanation amounts logically to a tacit denial of any heterogeneity in mind at all. Matter may be infinitely divisible, but it does not therefore follow that a watch is made of watches. Secondly, Mr. Bradley is doubtless well aware of the difference between the simplicity of an idea and the idea of simplicity, between the complexity necessarily involved in the idea of the simplest relation, and the simplicity of the relation as an actual fact. Yet all that he does is to show that our conception of activity is complex, not that action itself is so; nor does he succeed in resolving activity itself into a mere interaction of presentations *inter se*. This brings us, thirdly, to his account of the origin of what he calls the feeling of activity—one might say, to his attempt to explain it away. In this he makes certain assumptions which seem to surrender the entire position contended for. The account is substantially a *résumé* of what Herbartian psychologists, such as Nahlowsky and Waitz, offer as an analysis of the so-called "formal feelings," and except for the preliminary assumptions has little relevance to our question at all. Here they are:—

"I have to assume the doctrine that of our psychical contents a certain group is closely united, and is connected in a very special manner with pleasure and pain, and that this group is the first appearance of our self. I have to assume again that this psychical mass, with its connexions, is perpetually growing larger and smaller as against other contents. And I must assume once more that the expansion gives *in general* a feeling of pleasure, while contraction brings pain, and that we may call these the two chief modes of self-feeling" (MIND xi. 319).

Now it is easy to see that the "first appearance of our self" means not the first beginning of the conscious subject but that stage "in the growth of the soul" at which the conscious subject acquires the idea of self, becomes, as we say, self-conscious. It is also clear that pleasure and pain are not actual constituents of this "first appearance of self," but, as we are told, are connected with it, inasmuch as certain changes in this group *bring* or *give* (to the conscious

subject) a feeling, which is pleasure or pain according to circumstances. The subject of this feeling is in general pleased when the psychical mass that constitutes the first appearance of self expands, and pained in general when this psychical mass contracts; and the expansion or contraction of "the group of the self" is to be understood as relative to a concomitant contraction or expansion of the rest of our psychical contents, *i.e.*, the not-self. But why should the expansion of the one portion give or bring pleasure rather than the expansion of the other? Both are so far nothing but groups of ideas. The author tells us two things about the pleasurable expansion: (1) it "is *not* the consciousness *of* activity"—this is only its delusive interpretation; but (2) it merely is and is felt in a certain way. Here again, as in the case of the conscious subject and "the first appearance of self," we have the old distinction of subjective fact and objective reflexion; only that in this case we are expressly warned that the mirror is false. But is it? What then are we to make of the following sentence? "We are active, when the not-self . . . changes in the presence of an idea, and (I will add) [a most important addition] *a desire of that change within the self*" (p. 320). The change in the not-self we may fairly take to be a contraction: as to the desire, Mr. Bradley has not analysed this for us; but it seems plain that he regards it also as pertaining to the subject that feels, and not to that group of our psychical contents that forms the appearance of self. Thus we have the conscious subject and the psychical contents of which it is conscious "connected" first by pleasure and pain, and secondly by desire, *i.e.*, first by feeling and secondly by action. Add to this that the contraction is spoken of as implying resistance, and that "in getting the idea of self-expansion the muscular element is most important". Yet for all this the conception of activity is only an intellectual construction: "in fact, of course, being nothing at all". How does Mr. Bradley propose to convince us of this not very evident conclusion? By a judicious use of the words facts and events: "In all this, he says, there is a happening—a happening of events; there is nothing beside facts coexistent and successive with the result of other facts. And I think in this way we could give throughout psychology a definite meaning to action and passivity." With some reserve on the point of definiteness, no doubt, we shall all agree. Not only psychology but most other things can be explained after this fashion, but what is a fact? And how is the reality of activity affected by an empty generalisation of everything into happenings and facts?

IV.—RESEARCH.

EXPERIMENTS ON THE ASSOCIATION OF IDEAS.

By James McKeen Cattell, Ph.D.

The Association of Ideas has been a favourite subject with psychologists from Aristotle on, yet the results have not been very definite from the scientific point of view. An important paper by Mr. Galton[1] first applied experimental methods to the subject, and put it in a way where scientific advance was possible. Professor Wundt at once saw the importance of this work, and took it up in his laboratory with improved apparatus and methods.[2] Nothing further has, however, been published on the subject, which is a pity, as experimental psychology seems to have its most hopeful outlook in this direction.

Experiments I described in a paper contributed to Mind, Nos. 42-4, on "The Time taken up by Cerebral Operations," showed that about $\frac{2}{5}$ sec. was needed to see and name a word. When the physiological factors and the time taken up in seeing the word were eliminated, it was found that about $\frac{1}{10}$ sec. was spent in finding the name belonging to the printed symbol. The time was longer for letters, which we do not read as often as words, and still longer (about $\frac{1}{4}$ sec.) for colours and pictures. I called the time passing, while the motor expression was being found, a 'Will-time'. The process is, however, largely automatic, and consists in carrying out an association previously formed between the concept and the expression. There is no break between such a process and the other processes I am about to describe.

I.

If an object is named in a foreign instead of in one's native language, the association between concept and expression is less intimate and takes up more time. It is an open question as to how far concepts are formed without the aid of words, and it is not evident what mental process takes place when an object is named in a foreign language, it depending, of course, on the familiarity of the language. It need scarcely be said that we know almost nothing as to the physical basis of memory and thought; we may hope that psychometric experiments, such as I am about to describe, will contribute something toward the study of this subject. In the paper above mentioned I showed how we can determine the time it takes to see and name the picture of an object; in like manner the time we need to name

[1] *Brain*, 1879; cp. Mind, iv. 551.

[2] *Physiologische Psychologie*, c. xvi.; *Philosophische Studien*, i. 1.

the picture in a foreign language can be measured. I must refer the reader to that paper for a detailed account of apparatus and methods. ·001 sec. is taken as the unit of time, σ being used as its symbol. B (Dr. G. O. Berger) and C (the writer) are the two subjects; after these designations there is given the average time taken in all the experiments made, and the mean variation of these measurements from the average; after this is given a second average and mean variation, found by dropping the most irregular times in accordance with the method I have described.[1] The number of experiments made on each subject is given in parenthesis. The experiments were made at Leipsic during the first half of the year 1885.

I give first the time it took the subjects to recognise the pictures of twenty-six familiar objects, and name them in a foreign language—B in English, C in German.

Pictures named in Foreign Language (78).

B	649	104	632	49	C	694	87	682	43

It has been shown[2] that B took 477, C 545σ to see and name these same pictures in their native languages. B consequently needed 172, C 149σ in addition to find the name in a foreign language. C talks German readily, B English less so. These should be compared with other experiments I have made showing that the rate at which a person can read a foreign language is proportional to his familiarity with the language.[3]

We go a step further when a word must be translated from one language into another. The mental operation is again obscure, the processes of translating and naming not being sharply defined; but if we subtract the time it takes to see and name a word from the time it takes to see a word, to translate it into a foreign language and name it, we get approximately the time of translation. This time I give for translating from a foreign into the native language, and in the reverse direction. I have subtracted the time it takes the subjects to see and name words (B 390, C 428σ), and the mean variation (B 28, C 20; in the corrected series, B 19, C 13σ).

English-German: Short (Common) Words (78).

B	240	77	199	36	C	258	59	237	29

[1] MIND, xi. 229. It will be noticed that the corrected averages are usually smaller than the averages from all the determinations; this is because the subject found difficulty in a few cases. The uncorrected value gives the average time taken up by associations; the corrected average more nearly the time usually taken up by associations.

[2] MIND, xi. 533.

[3] *Phil. Studien*, ii. 635; Abstract in MIND, xi. 63. I hope shortly to print an account of experiments showing the increasing rapidity with which the classes of a German gymnasium can read Latin.

English-German: Long (Less Familiar) Words (78).

331	96	309	67	388	101	367	62

German-English: Short Words (78).

303	148	237	53	152	17	153	13

German-English: Long Words (78).

593	281	573	116	411	85	389	55

These numbers show that foreign languages take up much time even after they have been learned, and may lead us once more to weigh the gain and loss of a polyglot mental life.

II.

A great part of our time is spent in calling to mind things we already know. Memory is no transcendental process outside of space and time; this paper shows just how much time it takes to remember, and we have every reason to believe that the time passes while certain changes in the brain call forth other changes. I give below the time it took B and C to remember certain facts, examples of the necessary associations with which the mind is continually busy. A well-known city was given, and the subject named the country in which it is situated; a month was given, and the season to which it belongs was named, and in like manner the preceding or following month; an eminent author was given, and the subject named the language in which he wrote; a distinguished man, and his calling was named. In the last two cases below, the subject respectively added and multiplied numbers of one place. At first sight this mental operation may seem to consist of a mathematical calculation, and to be altogether different from the others; it is however not unlike them, being essentially an act of memory.

City-Country (52).

B	348	53	333	35	C	462	120	413	65

Month-Season (26).

415	55	410	31	310	63	306	16

Month-Following Month (26).

345	45	327	25	389	172	384	61

Month-Preceding Month (26).

763	245	619	129	832	233	815	160

Author-Language (78).

417	80	402	53	350	57	337	32

Man-Calling (78).

465	89	440	62	368	95	326	53

Addition (52).

221	46	223	23	336	77	299	36

Multiplication (52).

389	71	369	38	544	225	507	158

The mental processes considered above are by no means invented for the sake of experiment, but are such as make up a considerable part of life. We see that it took the subjects $\frac{2}{5}$ to $\frac{4}{5}$ sec. to call to mind facts with which they were familiar. The times needed in the different cases are of interest. The time of addition was the shortest of all; B needed 168, C 208σ longer to multiply than to add; it took twice as long to call to mind the foregoing as the following month. It will be noticed that the times of the two subjects correspond closely (the average time in the eight examples given is 420σ for B, 436 for C); the differences of time in the several cases are explained by the character and pursuits of the subjects, and in turn throw light back upon these. For example, B is a teacher of mathematics, C has busied himself more with literature; C knows quite as well as B that $5+7=12$, yet he needs $\frac{1}{10}$ sec. longer to call it to mind; B knows quite as well as C that Dante was a poet, but needs $\frac{1}{10}$ sec. longer to think of it. Such experiments lay bare the mental life in a way that is startling and not always gratifying.

The numbers given are the averages from many measurements; the mean variation shows how greatly the separate determinations vary from the average. This variation is partly owing to changing conditions of the brain, so that the same process never takes exactly the same time; it is, however, largely due to the fact that the mental operations under the same class are not equally simple, and consequently require different times. Just as it takes less time to add 2 to 3 than to multiply 2 by 3, so it takes less time to add 2 to 3 than to add 6 to 7. Owing to the normal variation in the time of the same mental process, we should not place too much reliance on a small number of measurements; it will, however, be worth our while to notice a few examples. In giving the country in which the city is situated, as average of three trials, both B and C took the shortest time for Paris (212, 278σ), and the longest time for Geneva (403, 485σ). In giving the language in which an author wrote, as average of the three trials, B took the shortest time for Luther (227) and Goethe (265), and the longest for Aristotle (591) and Bacon (565); C took the shortest time for Plato (224) and Shakespeare (258), the longest for Chaucer (503) and Plautus (478). In the case of Luther B took 244, in the case of Goethe 102σ less time than C; in the case of Shakespeare C took 186σ less time than B. It should be borne in mind that B is a German, C an American. In giving the calling of eminent men the order was as follows, the shortest times being placed first:—B—Poet (355), Warrior, Historian, Philosopher, Artist, Reformer, Man of Science (657); C—Poet (291), Artist, Historian, Warrior, Philosopher, Reformer, Man of Science (421). With both subjects Poet comes first and Man of Science last. It is easier to think of Homer as a poet than of Darwin as a man of science.

III.

In the experiments so far considered a question was asked which admitted but one answer: the association was necessary, and the interval passing while it was being formed might be called a 'Recollection-time'. A question can, however, be so arranged that beside the act of recollection a certain choice as to the answer must be made, and in this case a little more time is needed. Below is given the inverse of several of the cases we have considered; a country being given, some city situated in it had to be named, &c. The last line gives the time needed to think of a work by a given author.

Country-City (26).

B	400	72	357	45	C	346	75	340	48

Season-Month (26).

561	92	548	36		435	99	399	54

Language-Author (78).

663	200	702	110	519	137	523	83

Author-Work (26).

1076	397	1095	287	763	308	596	127

It will be seen that it took no longer to name a city when the country was given than the reverse; in this case there was but little choice, as there is in each country one particular city which was named almost as a matter of course. It took, however, considerably longer to name a month when the season was given and an author when a language was given than the reverse. A choice had in the former case to be made, and further, as Steinthal has before remarked,[1] the mind moves more readily from the part to the whole than from the whole to the part. It will be noticed that the naming a work by a given author is one of the most difficult associations considered in this paper. As to the time taken up by the separate associations, I must again call attention to the fact that it is largely determined by accidental variation. This variation could only be eliminated by making a large number of experiments, and in this case we should no longer have the time taken up by associations in our daily life, but the minimum recollection-time, which would tend to become the same for different classes of associations as they became equally familiar. In naming a city, C needed the longest time for Brussels (1042) and Pekin (1001); the shortest time for Athens (214) and Philadelphia (222), his home. In naming an author, less time was needed for English, German and Italian, where Shakespeare, Goethe and Dante at once occurred, than in the three other languages used, French, Latin and Greek. In naming a work by a given author C needed the

[1] *Einleitung in die Psychologie und Sprachwissenschaft*, p. 161.

longest time for Chaucer (*Canterbury Tales* 1898), Aristotle (*Logic* [*sic*] 1522), and Bacon (*Novum Organum* 1388); the shortest time for Milton (*Paradise Lost* 328), Dante (*Inferno* 373), and Goethe (*Faust* 393).

IV.

We now come to consider certain classes of associations in which the mind is allowed a larger degree of liberty. The times required in eight such cases are given. A noun representing a class of objects was given and a particular example was named (river-Rhine); a picture of an object was shown, and instead of naming the entire picture the subject was required to select some part of the object and name it (picture of a ship-sail); a concrete noun was in the same way given and a part of the object was named: both the pictures and names of objects were shown, and the subject said what the thing is used for or what it does (horse-ride or trot); a substantive had to be found for an adjective (blue-sky), a subject for an intransitive (swim-fish) and an object for a transitive verb (write-letter).

				Thing-Example (52).					
B	727	216	663	102	C	537	179	457	95
				Picture-Part of Object (52).					
	399	96	368	40		447	162	415	69
				Substantive-Part of Object (26).					
	578	128	568	85		439	135	404	82
				Picture-Property (52).					
	358	105	325	49		372	121	370	78
				Substantive-Property (26).					
	436	157	390	109		337	100	291	69
				Adjective-Substantive (26).					
	879	278	823	186		351	86	307	41
				Verb-Subject (26).					
	765	366	584	166		527	171	497	107
				Verb-Object (26).					
	654	242	561	139		379	122	317	86

The times given need no long comment. The most difficult associations seem to be the finding of a special example when the class is given, and the subject for a verb; in both of these cases the times needed were irregular, as is shown by the large mean variation. B took 111, C 146σ longer to find a subject than to find an object for a verb, the mind moving logically in the latter direction. In identifying a particular object the mind was inclined to choose either one immediately at hand or to go back to the home of childhood. Thus out of the 52 cases B thought of an object

in the room 8, C 20 times;[1] of objects identified with the early home B 22, C 19 times. In the other cases this was mostly impossible, but also here either a very recent or an early association was formed in all except 6 out of the 104 cases.

v.

We have lastly to consider the time it takes to form a judgment or opinion. I choose three cases in which the results could conveniently be averaged. In the first case the subject estimated the length of a line drawn horizontally on a card 10 cm. long, 50 lines being used varying in length from 1 to 50 mm. In the second case the subject estimated the number of short perpendicular lines on a card,[2] the number varying between 4 and 15. In the third case the names of two eminent men were shown, and the subject decided which of them he thought to be the greater.

Length of Line (150).

B	1124	242	1127	154	C	664	124	664	88

Number of Lines (26).

	183	57	180	35		319	74	313	45

Eminent Men (104).

	667	143	604	80		558	171	522	112

I made rather a large number of determinations with the lines, as I wished to find the ratio between the length of the line and the average error (psychophysical law), and between the error and the time taken up in coming to a decision. I think it however desirable to still further increase the number of experiments before publishing the results. In judging as to the relative greatness of eminent men, as might be foreseen, the times were shortest where the judgment was easiest, more especially if the subject had already compared the men together (Homer, Virgil). The nature of the judgments is not without interest, but can better be considered when I come to print similar experiments which I have made on a larger number of subjects.

The associations we have been considering in this paper are in their nature fixed or limited, and we have concerned ourselves chiefly with the time taken up. The conditions of the experiment can however be so arranged that one idea is allowed to suggest another somewhat as in our ordinary thinking. I shall shortly have ready experiments in this direction in which both the time and the nature of the association will be considered.

[1] The experiments were made in C's room.

[2] For experiments on the Limits of Consciousness see Cattell, *Phil. Studien*, iii. 94.

EXPERIMENTS ON "PREHENSION".

By Joseph Jacobs.[1]

It is obvious that there is a limit to the power of reproducing sounds accurately. Anyone can say *Bo* after once hearing it: few could catch the name of the Greek statesman M. Papamichalopoulos without the need of a repetition. It is here attempted to ascertain the normal limits of such reproduction in various circumstances and under varying conditions. At first experiments were made with nonsense-syllables like *cral-forg-mul-tal-nop*, as suggested by Ebbinghaus's experiments. It was found, however, that the syllables used varied greatly in relative difficulty of pronunciation and in relative facility of rhythm. After a few trials they were abandoned for letters (omitting "double *u*") and numerals (omitting "seven" as dissyllabic). It was found on the whole that the facility of reproducing the different kinds of sounds, after once hearing them, went together in a tolerably constant ratio. Thus a number of schoolgirls who could repeat on an average 6·1 nonsense-syllables could repeat 7·3 letters and 9·3 numerals. The explanation for this order of difficulty is not far to seek. The syllables, as contrasted with numerals and letters, are new to the hearer, have to be learnt, and absorb more energy; then, again, their grotesqueness would distract the attention more. The comparative difficulty of reproducing letters as compared with numerals is not so obvious. Reading accustoms us to take letters in groups having a phonetic value, and collocations of consonants like *bsvlrtm* strike us in a minor degree with the same sense of incongruity which prevents our minds from easily assimilating a conjunction like *dak-mil-tak-bin-roz*. Numerals, on the other hand, have few, if any, associations of contiguity, and we are accustomed to find them in haphazard order. Finally, our expectant attention has only to search among nine numerals, whereas it has to be ready to select from twenty-five letters. School-habits, however, might modify these conditions, and the cases were not infrequent in which the limit for letters was higher than for numerals: thus in one set of schoolboys no less than 14 boys out of 88 could repeat more letters than they could numerals, while 33 of the remainder had the same limit for both.

[1] The following investigation was made with the co-operation and advice of a circle of inquirers interested in psychological science, among whom should be mentioned, in the present connexion, Mr. J. Sully and Mr. Carveth Read but especially Mrs. S. Bryant, D.Sc., who obtained the results from the North London Collegiate School and made many valuable suggestions both in the part of the investigation now presented and that still in hand.

Numerals have the further advantage that school-children are accustomed to take them down from dictation, and this leads us to deal with the *modus operandi* adopted in obtaining our results. It was necessary, in the first place, to adopt some uniform rate at which the dictation should be given, as the power of apprehension varied with the rate of utterance. A sound every half-second was found to be a convenient rate, and a little practice with a metronome beating twice a second gives the experimenter a sense of the proper interval. The repetition was in the first experiments oral, but afterwards was taken in written form. If possible, two sets of the series of sounds should be given, and the highest number correctly reproduced is to be regarded as the limit which we wish to find, and which we term here the *span*. The reading should be in a monotonous tone, so as not to give any perceptible accent or rhythm, either of which, it appeared, assists the power of repetition in a considerable degree. The papers, when handed in, were marked with the names of the " subjects," to which it was found useful to add their ages and, if possible, their places in form.

Early in the inquiry it became evident that the power of reproducing a number of sounds increased steadily with *age*. Our materials enable us to draw up the following Table, which clearly shows the increasing power of school-girls in mastering nonsense-syllables as they grow older :—

Age, ...	11	12	13	14	17	18	19	20
Number of "Subjects," .	3	7	11	9	12	13	6	2
Average of Syllables, .	5·3	5·3	5·7	5·2	5·7	6·1	7·2	7·0

Here there is a distinct rise from 11 to 13, and from 17 to 19, and a marked progress in the whole series from 5·3 at 11 to 7·0 at 20. The same gradual increase of span is also shown in the following results for boys and girls of various ages in reproducing numerals and letters :—

	Boys.			Girls.				
Age, . .	11	12	13	13	17	18	19	20
"*Subjects*," .	70	57	47	60	32	28	4	3
Av. of Numerals,	6·5	6·8	8·8	8·3	9·1	9·9	9·4	9·0
Av. of Letters,	5·5	5·7	6·9	7·3	8·7	8·8	8·1	8·0[1]

[1] These are summaries of results by different observers and under varying conditions. Later on a more extended and trustworthy set of observations were made on the girls of the North London Collegiate School, with the following results :—

Age, . . .	8	9	10	11	12	13	14	15	16	17	18	19
"*Subjects*," .	8	13	19	36	41	42	42	72	66	50	30	14
Av. of Numerals,	6·6	6·7	6·8	7·2	7·4	7·3	7·3	7·7	8	8	8·6	8·6
Av. of Letters, .	6	7	6·6	4·6	6·5	6·7	6·7	7·4	7·9	7·3	8·2	7·9

The answers were here written down, not taken orally as in the cases tabulated above. The uniform reduction of span at the corresponding ages

Steady advance is shown on the average throughout this Table except in the highest ages of the girls, where, however, the numbers are too small to allow us to draw any definite conclusions. The progress must, however, stop at some time, and the familiar fact of minds getting ' stale ' after a certain age suggests the possibility that the increase in the span ceases with the increase in the bodily growth. The most noteworthy result of the table is the sudden leap of two syllables in the cyphering powers of the boys between the ages of 12 and 13. This may be due to greater practice in arithmetic. At any rate it raises them above the average for the girls of the same age, though they hold the reverse position as regards letters. No conclusions can be drawn as to the relative spans of the two sexes at the age of 13, as the subjects were drawn from two entirely different grades of society, and in the case of the boys (who were of the Jews Free School, Bell Lane,)[1] racial influences may have been at work in producing earlier maturity.

If, then, the span increases normally with age up to a certain point, it follows that in any class of the population, and in the population generally, below that age there will be a fixed number of syllables, letters and numbers which can on the average be seized after once hearing by persons of each age. This number can be determined by the means referred to above, and might easily form an addition to the usual items of anthropometric inquiries. If this were done we should obtain a *standard* span for the various ages and conditions just as we do for height, weight, &c., a standard relative and not absolute, but still enabling us to ascertain whether a boy or girl were above or below the average, and even the rate of growth in this particular. Another fact came out with equal clearness as our materials accumulated. This was that, as a rule, high span went with high place in form. Thus, selecting 30 boys of 12 years old out of a class and taking the average of their span as regards numerals, this was found to be 9·1 for the first ten, 8·3 for the next ten, and 7·9 in the remainder. In another class, also of 30 boys of the same age, the averages of the three sets of ten were in order 7·6, 7·1 and 6·3 respectively. Eight girls of the same age, taken in their order in class, gave for the first four an average of 8·2 for numerals against 8·0 for the last four, while the span for letters remained constant. With 12 girls of 13 years of age the first six had an average span of 8·3 against 7·8 for the last six in the case of numerals, while for letters the two sets were again equal. But the generality of the relation comes out clearly in the following

(of the girls) may perhaps be taken as a mark—or even as a measure—of the cerebral process involved in translating sounds into their visual symbols.

[1] The experiments were made by Mr. Louis Cohen, one of the masters of the school.

Table, giving the averages for the first and second halves of the various classes at the North London Collegiate School for Girls:—

	Numerals.		*Letters.*	
Form.	1st half.	2nd half.	1st half.	2nd half.
VI.	10·5	9·1	9	8·1
Up. V.	9·8	9·1	8·8	8·2
V.	7·9	8·6	8·1	7·8
L.V.R.	8·2	8·1	8	8·1
Low V.	8·5	9	8·2	8
Up. IV. R.	8·4	8	8·4	7·5
Up. IV.	8·4	7·8	7·4	6·5
IV. R	8·6	7·6	7·2	6·9
IV.	8	6·6	7	6·5
L. IV. R.	8	6·7	7·1	7·5
L. IV.	7·5	7·5	7	6·3
Up. III.	7·4	6·4	6·4	5·4
III.	7·8	8·5	6·7	6·4
II.	6·8	4·9	6·5	6
I.	7·4	7·1	6·8	7

Here the general superiority of the averages for the first half of the class comes out distinctly, though with exceptions which in many cases allow of special explanation. The only difficulty is the very small extent of variability: in order to get a wider range, and also to test the obvious deduction to be made from these figures, it was suggested by Mr. Francis Galton that experiments should be tried on idiots, and he kindly undertook the inquiry in conjunction with Prof. Bain and Mr. Sully. The detailed results are given below. At Earlswood the average span was as low as 4, and much the same at Darenth. 'Idiots' differ so much as to make it, indeed, hardly possible to speak of average results; but it appears that few, if any, attain to the normal span, and that a good number of those who can 'speak' at all are unable to reproduce more than 2 numerals.

This notable concomitance of high span and high place in form, though at first sight surprising, is perhaps nothing more than a corollary of the one previously shown. If the span rises with age, and is thus seemingly a measure of a pupil's relation to the standard of his or her age, it should not be surprising that a pupil with a span higher than the normal should take rank above those of the same age. At any rate, whatever be the cause, the above facts are too consistent and widespread to leave much doubt as to there being a definite connexion between high span and high place in form. And, so far as high place in form can be said to measure ability, the span may serve as some indication of ability.

This at once raises the question as to what is the exact power of the mind which is involved in reproducing these sounds. In our experiments we have simply tested the power of temporarily retaining sounds long enough to reproduce them correctly. We

propose to call this power *Prehension* from the analogy of Apprehension and Comprehension, to both of which it is clearly related as a simpler process. It may be described as the mind's power of *taking on* certain material; in this case auditory sensations. Now, of course, this power of taking on need not necessarily go with that of *taking in*, but, on the other hand, we clearly cannot take in without first taking on, and the mental operation we have been testing thus seems a necessary preliminary to all obtaining of mental material, *i.e.*, through auditory presentations. Under these circumstances we might expect that "span of prehension" should be an important factor in determining mental grasp, and its determination one of the tests of mental capacity. The results given above, as far as they go, seem to confirm in no slight degree the theoretical probability.

Supplementary Notes on "Prehension" in Idiots.

By Francis Galton, F.R.S.

Prof. Bain and myself paid a visit of $4\frac{1}{4}$ hours' duration to the Earlswood Asylum for Idiots, on June 18, 1886, where we were received by Dr. Cobbold, who gave us every assistance. There were 566 idiots in the asylum, and he picked out those who were the most suitable for our inquiries.

He told us, and we had abundant evidence of the truth of the statement, that, as a general rule, idiots are incapable of the simplest arithmetic. Usually they cannot even add two figures together, though they may know the multiplication table by rote. On the other hand, a very few cases are to be met with in which idiots have a tenacious memory for dates. We determined to apply the test of the number of figures that can be orally repeated after having heard them read out once distinctly, to (1) the better class of idiots generally; (2) those who had the special power of recollecting dates, and to test the latter in other ways as well.

I. Nine of the best girls were selected by Dr. Cobbold out of the class-room. They could all read and write a little, and were intelligent enough to do some house work. They were aged apparently from 16 or 17 to 25. They all failed in adding two figures together, such as 3 to 5, 4 to 7, &c. Their performances in the numeral-test are given below at A.

Six other girls were then taken by Dr. Cobbold from the same class not quite indiscriminately, as our wish at that moment was to find girls who were intelligent enough to answer quickly, and who were nevertheless unable to repeat many figures. The result was, however, that given at B.

	Number of cases.	Greatest number of Figures that could be recollected.		Number of Figures at which the memory first wholly broke down.
		Perfectly.	Imperfectly.	
A	1	2		3
	1	3		4
	1	4		5
	2	4	5	6
	4	5		6
B	1	2		3
	2	3		4
	1	4		5
	1	5		6
	1	6		7

Having thus obtained two girls, one from each batch, who could not repeat more than two figures without mistake, 23 trials were made with them with three figures in each, and their errors were classified. In 17 cases the last figure was rightly repeated; in 10, the second; and in 7, the first. The last uttered figure is therefore most easily repeated.

There was no obvious tendency to transposition. One of the girls had a peculiar trick of duplicating a numeral and giving an answer of 4 instead of 3 figures, thus 1216 for 216, 0808 for 408.

II. Three men idiots were brought to us who were remarkable for their memory of dates; their initials were J. M., W. C. and G. M.

The speciality of J. M. was his acquaintance with Magnall's *History*. I had seen him some years ago when I visited the Asylum in company with Mr. Romanes, previous to Dr. Cobbold's appointment. He had then a well-thumbed volume, printed to the best of my recollection in small type; he now has a new volume of 419 pages, small 8vo, and in large type, but does not profess to know the whole of it by heart. He was tested at the lives of Copernicus, Columbus and elsewhere, and repeated with considerable exactitude. Where he substituted words they made good sense, and where he omitted words or passages the omissions did not spoil the sense. He repeated much that we did not find in the book, but which I ascribed to his recollection of the more diffuse edition of the work. He was asked about astronomical measures and gave abundance of correct numerical data, and when questioned as to their signification answered sensibly enough. His memory cannot be visual, as he does not know in what part of the page the recollected passages lie. Of the sermons he had heard, he could remember the texts of many and the dates when they were preached, but not the sermons themselves. His power of learning new sentences seemed small; he

was tried with one of three lines out of a local guide-book that lay on the table, which was written in much the same magniloquent language as Magnall's *History*, but after five readings he failed to recall more than a few words.

On trying the numeral-test, he was right four times out of six with three figures, but wholly broke down at four.

W. C. has a minute recollection of dates of deaths, visits, holidays and other events in the asylum. He was tried in many cases familiar to Dr. Cobbold and in others verified by his journal, and his answers were pronounced to be exact. He also had a considerable knowledge of the day of the week on which any day of a month would fall in the present or in recent years, and was particular about leap years. I tried him from my pocket almanac. He correctly gave Monday as the day on which May 10 fell this year. The 13th of April puzzled him a little; he recollected that the 12th was a Wednesday, but calculated at first wrongly from that premiss; however he at last got the answer out correctly. When I pronounced the names of a month, day and year to him, as "October the twelfth, 1883," he could not recollect it, apparently from want of interest in abstract figures.

The numeral-test was a complete failure with him. We could not get him to repeat even three figures by rote. He seemed unable to understand what was wanted, and gave some fancy results.

G. M. had a memory for dates resembling that of W. C., but less good. They often conferred together about them. He was quite unable to add, saying that 2 and 3 made 4, 3 and 2 made 6, &c.

The numeral-test was a complete failure; he did not seem to understand what was wanted.

The impression left by these three men, based on what they said, and otherwise confirmed, was that their memory was chiefly due to their habit of mentally reiterating certain events and phrases that happened to interest them, so that their memory was peculiar in its limitations rather than strong. It would follow that if they happened to take a fancy to the numeral-tests, future results might not be so complete a failure as these were.

Prof. Bain has read the rough draft of this, and approves.

On June 30, 1886, Mr. Sully and I spent four hours at the Asylum for Idiots at Darenth, near Dartford. Dr. Fletcher Beach had kindly made preliminary experiments there for us, and when we arrived he gave us every assistance.

Most of the Darenth inmates are merely imbecile. Those reckoned as "first-class" struck me as far superior in intellect to any I had seen at Earlswood, and those of the second-class as distinctly superior to the first-class at Earlswood. They were

taught some simple arithmetic. In the lower classes it seemed that the children were better able to seize what was wanted when tested with the names of letters than with those of numerals, so in the later experiments letters were employed; otherwise the mode of testing was exactly the same as that used at Earlswood. The names of the numerals (or letters) were distinctly uttered at estimated intervals of half a second, and after I had quite done the child began to repeat them.

Below, the figures *on* lines are intermediate estimates; thus in the case of one idiot who was not successful with 3 figures, we had reason to think the mistake possibly due to other causes than incapacity, so the entry was made on the line dividing 2 from 3.

	Span of Prehension.								
	2	3	4	5	6	7	8	9	10
Class I. The four sharpest children; ages 9, 12, 13 and 15. The quickest of these, who repeated 9 figures, was only "morally imbecile".				1		2		1	
Class II. Ages, 9-16.		1	1	1	2	1	1		
Claas III. Three of those whose span was only 2 had been removed from school for nearly 12 months. Their ages are 18, 18, and 19. The others range from 11 to 15.	4	2		5	2				
Class IV. Ages 11-15.		2	1						

It was very noticeable that the last uttered word was the best repeated, and after this the first. Also that there was much tendency to the transposition of adjacent words. The children were usually slow of utterance and apparently of thought. They tired very quickly; sometimes after only three or four attempts. In other cases there was an improvement within brief limits, due apparently to their better understanding what was required. They did not show signs of inattention (by looking away, &c.), but upon this Dr. Fletcher Beach remarks that the faculty of attention is one of the first to be trained. If the children should be made familiar with these experiments, and be tested when quite fresh, at and a little beyond the limits of their previously ascertained span, it is probable that better results could be obtained. They seemed to take pleasure in the tests and to show emulation.

I submitted a rough draft of the foregoing to Mr. Sully, and afterwards to Dr. Fletcher Beach, whose remarks are now incorporated in it.

V.—DISCUSSION.

"ILLUSORY PSYCHOLOGY."

By Professor John Dewey.

The fact that so acute and experienced a philosophical thinker as Mr. Shadworth Hodgson has misapprehended the bearing of the articles by me in Mind Nos. 41, 42, must be my excuse for again troubling the readers with reference to the matters discussed there. Mr. Hodgson seems to think that it was the object of one to explain the nature of the individual and the universal consciousness, and of the other to give some definite directions regarding the application of method to philosophy and psychology. Thus apprehending them, he quite naturally complains of the "blanks" in the argument; and, if I may judge from the tone of his remarks, thinks, indeed, that there is not so much an argument as an assumption, while my lack of logic is to him lamentable. May I be allowed to state that I had no such ends in view, and that what seems to Mr. Hodgson a lack of logic on my part seems to me a misunderstanding of logical *bearing* on his part? The logical purpose of the first article was as follows: Granted the general truth of that way of looking at philosophical questions which is specifically English (and which, following the usual custom, I called psychological), (1) to determine whether some important factor has not been overlooked; (2) to show that it is involved in this standpoint that all questions must be decided from their place in conscious experience; (3) to show that this general statement applies to particular questions, like the nature of subject and object, universal and individual; and (4) to show that this in turn implies that the psychological standpoint is one which transcends and underlies the distinction of subject and object, &c. Now it was open to Mr. Hodgson, or anyone else, to reply that I misinterpreted the standpoint of British philosophy; or that, while its standpoint was correctly stated, it involved no such implications as I thought it did; or that while it did involve such implications, this fact is, at bottom, only a *reductio ad absurdum* of the standpoint. But objections like those of Mr. Hodgson, with all due deference, seem to me a huge *ignoratio elenchi*.

And his misunderstanding of the logical bearing of the whole has influenced his treatment of details. Mr. Hodgson's aversion to some expressions is so acute that he seems hardly to have asked himself in what connexion these phrases are used. If he will re-read certain pages of the article referred to, I think he will see that the terms 'postulate' and 'presupposition,' whose use seems to him to involve a contradiction on my part, are used

not generally, nor with reference to my own standpoint, but in connexion with this examination of British philosophy, and that the contention of the article is, rather, that what has been an unconscious presupposition ought to be given a psychological examination and position.

So the logical bearing of the second article was not to give recommendations regarding specific methods, but to suggest to those whom Mr. Hodgson calls my "Germanising friends" that their results will never have a firm basis until they are reached by a psychological method. The article was entitled "Psychology as Philosophic Method," just as Mr. Hodgson might call a portion of his article "Metaphysic as Philosophic Method".

It thus appears to me that the mass of Mr. Hodgson's direct specific criticism is so beside the mark that it is needless to undertake a detailed review of it. But one may always learn much from Mr. Hodgson when he is positively propounding his own views; and certain discussions, as, *e.g.*, regarding the nature of the universal and the individual, and the mutual connexions of science, philosophy and psychology, are never beside the mark. I should like briefly to discuss the attempts which Mr. Hodgson kindly makes to fill the "blanks" in my argument.

I.

First, then, as to the relation of the individual and the universal consciousness, or, more properly speaking, of the individual and the universal in consciousness. The position of Mr. Hodgson, as I understand it, is that I have not duly distinguished between perceptual processes, which give us the individual, and conceptual processes, which generalise it and give us a result more or less abstract, and that consequently I have erected a generalised notion of my individual consciousness,—a logical abstraction into an actual *ens*, which I call universal consciousness (pp. 480 and 484). The real state of the case, we are to believe, is as follows: There is a "stream of states and changes" which comes to every individual; this is an individualised stream, and occurs in perceptual order. Out of it the world of ordinary experience is built. But the individual can think as well as perceive, and he comes gradually to generalise. This process of generalisation he extends even to his own consciousness; he generalises conscious experience itself. But the generalisation does not give, either in knowledge or belief, a universal consciousness different in any way from his own. It is merely the logical or conceptual way of representing individuality of what in actual experience is perceptual (pp. 480 and 483). A universal self can only be represented in thought as an individual self indefinitely or infinitely magnified (p. 486). The result is that, while we may speak of universal knowledge, the content of consciousness, it is fallacious and self-contradictory to speak of a universal knower, the agent or bearer of consciousness (pp. 484 and 485). The gist of the whole

controversy is, that while we may and must assume individuality as given to us (pp. 480, 483), universality is the result of a logical process. As to this I have to say:—

1. Mr Hodgson is misled by an ambiguity in the use of the term 'individual'. In one sense (in which it cannot be the subject-matter of any science) it is given to us; in another (in the sense in which it is an object of scientific knowledge) it is not given to us, but is a product of psychological experience. Every experience is given to us as a unique experience, a fact of absolute and immediate interest. Individuality in this sense is indeed an assumption which we need not care to avoid. But this assumption is only the assumption that a fact exists; it tells us nothing of the *meaning* of the fact. And it is the assumption that we know at the outset, what individuality *means*, and that the immediate fact of experience is the same as an interpretation of the fact, which plays such havoc with Mr. Hodgson's ideas. It is this assumption which enables him to slide unconsciously from the immediate unique interest which accompanies every experience, and which makes it mine or thine, to the fact of individuality, as one being among others, limited in space and time, and whose ideas occur as a "stream". Individuality in this sense is not "given," is not "immediate," and is an assumption which we must avoid making until we see what it *means*—until, in short, it is not an assumption. Individuality in this sense may be provisionally opposed to universality, but this sense is not an original or immediate *dictum*. It is a product which has come about through experience, through psychological experience. The process of its coming about, the way in which this gets to be a fact of our conscious experience, is something to be examined by psychology. The psychological standpoint is prior, so to speak, to this result. It is confusion enough to substitute this psychological product for the immediate individuality which is a matter of feeling, but to substitute a philosophical interpretation of the fact is to carry the confusion a step further. And this Mr. Hodgson does in giving individuality a meaning—that is, an interpretation—which opposes it absolutely to universality. One thing which Mr. Hodgson would have learned by going to psychology rather than to metaphysics would be to avoid this threefold confusion of the individuality of immediate feeling, of constructed fact of experience and of philosophical interpretation of the fact.

2. The substitution appears, however, in a still worse plight when we consider that this view of individuality which opposes it absolutely to universality is an *incorrect* interpretation. I speak, not as a Germanising transcendentalist, but according to my humble lights as a psychologist, when I say that I know nothing of a perceptual order apart from a conceptual, and nothing of an agent or bearer apart from the content which it bears. As a psychologist, I see the possibility of abstractly analysing each from the other, and, if I were as fond of erecting the results of an

analysis into real entities as Mr. Hodgson believes me to be, I should suppose that they were actually distinct as concrete existences. But, sticking fast to what Psychology teaches me, I must hold that they are aspects, analytically arrived at, of the one existing reality—conscious experience. Mr. Hodgson finds no difficulty in making the separation. He assumes—and speaking from the metaphysical standpoint would naturally assume—that there is "a stream of changes and states" which "come to an individual," and "out of this as data is built up ordinary experience". So he regards this "stream" as in some way individual, while the world built up out of it—the content—may be distinguished from it. To me it seems that this "stream" is built up along with, and mostly out of, the experiences of the everyday world. Stream and world are equally psychological constructions, built up by psychological processes. It must be from Metaphysic (it cannot be from Psychology) that Mr. Hodgson gets a "stream" which is given ready made. Psychology would tell us that the "stream" is essentially due to projections out from the present by a psychological mechanism in the form of memory and expectation. Consciousness is not a moving body, which, flying through time, leaves a trail behind it, as does a rocket in space. When the idea of an absent person is suggested to an infant, the child does not conceive this as an idea, but looks about him to localise the person. His life is a present one, and it is only through a psychological development that he comes to have experiences placed as past and anticipated as future. The experiences of time and of "streams" are due to psychological dynamics. The process by which the individual comes to connect certain experiences with himself as a being continuous in time, and to separate them from others which he refers to existences in space, is one of the problems of psychology. What is the bearing of all this? Simply, that we have no ready-made distinction between the individual agent and the world of experience over against him, but that each is built up out of a common material by contemporaneous processes. A correct psychology would teach Mr. Hodgson, it seems to me, not only that the *ordo ad individuum* and the *ordo ad universum* are built out of a common stock, but that the process is a reciprocal one, so that our ideas of ourselves as individuals, nay ourselves as individuals, are made up out of our experiences of the world, and *vice versâ*. The agent is not the agent which it is without the content, not only in the sense that it bears that content and no other, but in the sense that this content reacts upon it and is organised into it to make it what it specifically is. If Mr. Hodgson will make an absolute separation between the individual as agent and the content of consciousness as general, he will find that all that is left to the agent is: x is experienced and is interesting, where it is impossible to give x any definite values. Its analogies we may hypothetically find in the consciousness of an oyster.

3. And finally upon this point, I know of no perception which is not made what it is by conceptual elements within it. Mr. Hodgson well says that "every act of attention to a percept is the commencement of a generalisation" (p. 481). But it cannot be possible that Mr. Hodgson supposes that perceptions are given to us prior to attention, and that this is an activity which supervenes, the perception once formed. Correct psychology seems to teach that the attention—the active connexion between the mind and a given psychical complex—is necessary to interpret, to make it a percept. And unless there are two utterly different kinds of attention, generalisation must be thus introduced, and a universal element be present in the percept. I cannot believe accordingly that Mr. Hodgson's attempt to set up individuality of consciousness as opposed to universality is successful, whether it proceeds by distinguishing the perceptual order from the conceptual, or by distinguishing the stream of consciousness as given from the content of that consciousness as interpreted. At all events, I hope it is clear that this conception of universality of consciousness is not that of an individual indefinitely magnified. I should still be compelled to ask, What is this individual which is magnified? and if I deal with facts and not with analytic abstractions, I find it to be bound up through and through with universal factors, nay constituted by its relation to the universal factor. One word more, and I have done with this point. The universality of consciousness stands just where its individuality does. An individuality is "given" in the sense that every consciousness has a unique interest; so universality is "given" in the sense that *every* consciousness has a *meaning*. But the experience of the world as a fact, like the experience of the individual stream as a fact, is a constructed product. And the philosophical interpretation of the fact that there is a world of experience is still more remote from being immediate or given. In each of these three stages it stands just where individuality does.

II.

I can treat but briefly of the other point: the relation between Psychology and what Mr. Hodgson calls Metaphysic and what I called Logic. Mr. Hodgson seems to think that upon my theory no place can be left for physiological psychology, for race-psychology, &c., &c. They would, however, be left just where they are now—as special *methods* for determining the conditions and genesis of various factors in conscious experience.

When Mr. Hodgson says that Metaphysic abstracts from the fact that consciousness is individually conditioned (pp. 490 and 493) he simply suggests the point which was uppermost in my mind when I wrote the article on "Psychology as Philosophic Method". Metaphysic or Logic does abstract from the individual, which conditions the content. As thus abstract, it cannot furnish the final method of philosophy, for as abstract it makes an

assumption and is incomplete. It is incomplete; for is this unique and yet absolutely universal fact that the content of consciousness is known only in and to an individual—is this fact to be left out of account? The play of "Hamlet" with Hamlet left out seems to me nothing in comparison. It makes an assumption, for to make assumptions is simply to see how facts look when some integral factor is omitted.

English thought, according to Mr. Hodgson, has commonly ignored the universal or all-embracing character of the consciousness, and has identified it with individual being. So it seems to me, and the article in MIND No. 41 was written to show that psychology could not be even psychology, much less philosophy, until the universal factor in consciousness was attended to. Transcendentalism, he says, inclines to identify consciousness with universal being, and if this be interpreted to mean that it inclines to neglect the individual agent, without which the universality of the content is naught, I heartily agree with him. The article in MIND No. 42 was written to show that transcendentalism was incomplete till it recognised that the universal content can be realised only in an individual bearer. And I make bold to add that Mr. Hodgson thinks the two sides may be split, one surrendered to Psychology, the other reserved for Metaphysic; while to me it seems that we shall never get the surest footing and the completest results until we recognise that such halves—the individual without the universal content, and the universal content without the individual bearer—are *disjecta membra*. The science which unites them, and considers the content as realised in and by an individual, and the individual as realised through and by the content, seems to me to be Psychology. A psychology which should attempt to occupy the position Mr. Hodgson gives to it would have nothing to say except—Here is a consciousness which interests me, but about which I can say nothing.

THE GENERALISATIONS OF SCIENCE.

By Professor C. LLOYD MORGAN.

An important question is suggested by Mr. N. Pearson's interesting discussion of 'The Definition of Natural Law' in MIND No. 44. That question concerns the relation that Natural Law bears to the generalisations of science. Are the two fields coextensive? or is Natural Law a vast region of which the generalisations of science constitute only the known and accurately surveyed areas? Mr. Pearson holds the latter view. He objects to Lewes's description of a law as a notation of *observed* facts, and to the current definitions of natural laws as generalisations from experience, on the

score of their containing what he terms an "ascertainment-clause".

"It is perfectly accurate," he says, "to describe all known natural laws as observed uniformities of process: but surely the essence of the law is its *uniformity*, and not the accidental fact that it has been *observed*. Science is perpetually adding to the number of discovered laws; but these laws existed from the time when the operations of nature began, and the mere fact of their discovery does not add a tittle to their validity. In short, ascertainment is necessary to our *knowledge* of natural laws, but it is not the least necessary to their *existence*" (p. 564).

And, after elaborating his view, he says in conclusion:—

"If this be so, the case against the ascertainment-clause is made out. If we believe Natural Law to prevail *universally*, it is incorrect to define it as an order which is *limited*—limited, that is, by the condition of previous observation. If, on the other hand, we desire to restrict its meaning to *observed* uniformities of process, it is inaccurate to call it *Natural* Law; seeing that, *ex hypothesi*, it does not extend to the *whole* of nature, but only to that small part of it which has fallen under human observation" (p. 569).

Now there is much in Mr. Pearson's paper with which I am glad to find myself in agreement; but there is perhaps more in which I cannot concur. I am in agreement with him in believing that there is in a so-called Law of Nature something beyond a mere generalisation from experience. But I differ from him as to what that something is; and I wholly part company with him when he draws a distinction between our knowledge of Natural Laws and their existence.

Every Natural Law comprises, besides the generalisation from experience on which it is based, the hypothesis or assumption that it holds good not only in those cases which have been actually observed, but in all cases of like nature under like conditions. Laws of Nature are, as I have elsewhere expressed it, "well-proven and oft-verified inferences from known facts, and also, as we believe, generalised statements of *all* the facts of like nature, whether we have observed them and verified the law in their case or not" (*Springs of Conduct*, p. 70). I therefore fully agree with Mr. Pearson that to restrict the meaning of Natural Law to observed uniformities of process, and to limit it by the condition of previous observation, would be in the highest degree unsatisfactory and unwise. It would totally change the meaning which we attach to the oft-misunderstood term Natural Law. But I do not think that this would justify us in abandoning the "ascertainment-clause": nay, it would rather justify us in adding thereto an 'inference-clause,' at present implied but not expressed.

Mr. Pearson would, however, draw a far more fundamental distinction between Natural Law and notation of observed facts than that which I have briefly sketched. He holds that Natural Laws are not merely human products, the result of scientific generalisation and inference, but that they have an independent existence, separate from and holding jurisdiction over the facts, and only

await human discovery. This view is perhaps the prevalent view. And yet I venture to think that it is an erroneous view—a remnant of what a Comtist would term the metaphysical stage of knowledge—and one that is strangely out of place in these more positive times.

First, I would ask in what sense it can be true that these laws have existed from the time when the operations of nature began? Take for example the law of gravitation. Can we say that this law has been in existence since the operations of nature began? I think not. The law is a generalisation, and generalisation implies a generaliser. So far from having been in existence since the operations of nature began, it had, I contend, no existence before it was formulated by man. The phenomena from which such a law might be educed have been in existence for ages uncounted; but until man, the educer, appeared, the educed law could have no existence. The laws of nature, or, as I should prefer to call them, the laws of science, are human products, the result of observation and of inference based thereon.

In opposition to this view it may perhaps be urged that (to take a wider generalisation than even the law of gravitation) the operations of nature were uniform before man discovered their uniformity. Undoubtedly this is so. But the uniformity of phenomena and the law which summarises the fact are not one and the same thing. On this head, indeed, it would seem that both schools are agreed. But whereas the one school maintains that the natural law was there from the beginning, exercising what Mr. Pearson terms "absolute jurisdiction" over the facts, the other school believes with Lewes, that "what we call laws of nature are not objective existences, but subjective abstractions—formulæ in which the multitudinous phenomena are stripped of their variety and reduced to unity".

Again it may be urged that the law was implicit in the phenomena before man came to formulate it as such. Well, I am not quite sure that I know what implicit in the phenomena means. Does it mean that the law was actually existent as such? or does it mean that the facts were such that this generalisation could be extracted from them? In the former case I beg to be informed *how* actually existent. Mr. Pearson is careful to remind us that "Natural Law in the scientific sense involves no notion of an over-ruling ordinance". I would fain know the mode of existence of an unknown natural law and the manner in which it exercises its "absolute jurisdiction". But if the law was only implicit in the phenomena in the sense that when man appeared on the earth this generalisation could be extracted from them, then, as it seems to me, the law is only implicit in phenomena in the same sense and to the same degree that a half sovereign is implicit in the gold-bearing quartz-reef. The raw material was undoubtedly there. But on the strength of this to proclaim that the half sovereign was in existence countless ages

before the advent of man is, to say the least of it, somewhat confusing to plain scientific folk.

In further illustration of the positive or scientific position we may take that law of biogenesis which Mr. Pearson also adduces in illustration of his position. This doctrine, as he says, is probably accepted by ninety per cent. at least of scientific authorities; and it admirably exemplifies the nature of a law of science. It is essentially a generalisation from experience. Beyond experience and legitimate inference founded thereupon it does not pretend to go. No scientific man who thoroughly knew what he was talking about would, on the strength of this generalisation, dare to dogmatise from negative premisses and proclaim that nowhen and nowhere in the present or the past have living forms sprung into existence from not living antecedents. This would be a wholly illegitimate inference. Such a dogmatic assertion would probably come from one of strong theological bias, who had raised a plain scientific generalisation into a metaphysical law of nature, exercising in some mysterious way a mystic sway over facts. It is not by restricting Natural Law to an observed uniformity that we are most liable to fall into error; but rather by illegitimately converting observed uniformity, true within the limits of observation, true for finite time and space, and believed to be universally true under like conditions of experiment and observation, into a metaphysical Natural Law, supposed to be true absolutely and without possible limitation.

Now according to Mr. Pearson the law of biogenesis was in existence at a time when most of the best authorities believed firmly in spontaneous generation, the existence of the law and our knowledge of it being, in his philosophy, totally different things. But when, I would ask, did the law begin to exist? Did it exist before there were any phenomena over which it could exercise jurisdiction? Or did it spring into existence with the advent of life.

Let us, however, turn to other laws to press home these questions. I presume that the inductions of Sociology may take rank as natural laws. I presume that, though we may not yet adequately know them, there are natural laws exercising jurisdiction over the phenomena special to social aggregates. But since when existent? Have the laws been in some way evolved, *pari passu*, with the phenomena? Were they pre-existent? Or did they come into existence at some point of time during the continuous evolution of the phenomena? These are matters on which I would gladly be informed.

From the standpoint of positive science, however, this antithesis between our knowledge of natural laws and their existence involves a serious misconception of the nature of scientific laws. Such laws are essentially bits of knowledge, and except as known have no existence. In Berkeleyan phrase their *esse* is *cognosci*. An unknown scientific law is a contradiction in terms: it is a generalisation that has never been reached.

It may however be said by one who holds to this distinction between known and existent that such a geometrical law as that the three angles of a plane triangle are equal to two right angles, is a truth that exists whether we know it or not. It is, we are told, a fact for all time eternal and immutable, and would be just as true had no mathematician ever discovered it. I venture to doubt the truth of this venerable assertion. Of all branches of science none better than geometry illustrates what Lewes meant when he spoke of the ideal construction of science. The whole fabric is a human product. Its generalisations are absolutely true. Yes! So long as you grant the absolute truth of its axioms and postulates. The science from beginning to end is redolent of human genius; and without that genius had never existed. Given three stars and a human mind and the laws of the triangle emerge. But take away the percipient mind; and what remains but your three stars? Certain relations are implicit in the triangle which may be formed, if, between each pair of the stars, there be drawn the shortest possible line. True; but you need the geometer to perceive them. The half sovereign is implicit in the quartz-reef. True; but it has no existence *as such* till it be minted.

My position, which I believe to be the positive position, is now, I trust, sufficiently clear. I have no right to occupy space in its further elaboration. But I believe it to be essential that scientific laws should be purged of the metaphysical glamour of necessity, absoluteness, eternity, immutability and the like, which is too apt to surround them. And with this end in view I am not prepared to counsel the abandonment of the "ascertainment-clause" so long as this helps us to grasp the fact, that the laws of science which we call Natural Laws are neither more nor less than well-founded generalisations rooted in the solid ground of experience and spreading forth in the atmosphere of inference that rests thereon.

VI.—CRITICAL NOTICES.

Works of THOMAS HILL GREEN, late Fellow of Balliol College, and Whyte's Professor of Moral Philosophy in the University of Oxford. Edited by R. L. NETTLESHIP, Fellow of Balliol College, Oxford. Vol. II. *Philosophical Works.* London: Longmans, Green & Co., 1886. Pp. xliv. 552.

This second volume of Green's works is of much greater interest than the one which preceded it, from the fact that it consists entirely of matter not hitherto published. It is made up of selections from Green's drafts of his tutorial and professorial lectures in Oxford subsequent to 1874 (the date of the Introductions to Hume). The contents of the volume fall into three main divisions, the first consisting of "Lectures on the Philosophy of Kant" (both the *Critique of Pure Reason* and the Moral Theory), the second of "Lectures on Logic," or rather perhaps on the philosophy of logic, and the third, which is also the longest, of "Lectures on the Principles of Political Obligation". The second part is mainly taken up with criticism of Mill and dovetails at many points into the lectures on Kant. Sections D, F, G, H, for example, on verbal and real propositions, space and geometrical truth, time, demonstration and necessary truth, ought to be read in connexion with the Kantian discussions on analytical and synthetical judgments, the forms of perception, the distinction between 'outer' and 'inner' sense, and the 'empirical reality' of time. The third division treats, as its title indicates, of "the moral grounds on which the State is based, and upon which obedience to the law of the state is justified". Partly historico-critical, these lectures are in the main constructive, and contain, in effect, a theory of the State. The concrete and practical interest of the subject was specially calculated to stimulate Green's powers, and this third division of the volume will probably be found the freshest and most valuable, not to say the most interesting, part of the book. But we are no further concerned with it in the present notice.

The papers here printed do not pretend to offer a continuous exposition of Kant's theoretical philosophy; they are valuable rather for the criticism which they contain of some of Kant's prominent but often misleading distinctions. That between outer and inner sense, for example, is carefully dealt with in several places. In another case—the division of truths into necessary and contingent—Green points out that, while it is of course true that sense as sense can yield no necessity, there exists, on a true view of nature as constituted by thought relations, no such absolute distinction as Kant makes out between the truths of geometry and other scientific truths. This is instructively worked out in Sections F

and H of the second part of the book: "The true distinction is between what is fully true and what is partially true. What is fully true once is fully true always, of a natural phenomenon no less than of a geometrical figure; but any proposition about a natural phenomenon is true of it only under conditions of which we do not know all, while a proposition about a geometrical figure, if true at all, is true of it under conditions which we completely know" (p. 250; cp. also pp. 264 ff.). It will be evident from such instances that the lectures are quite as much devoted to evolving a coherent philosophy out of Kant as to expounding the undiluted Kantian doctrine. As an interpreter of Kant, indeed, Green follows substantially the method already familiar to us in Professor Caird's *Philosophy of Kant*—what I should call the method of sympathetic development. But he is perhaps more careful in distinguishing between the positions thus developed and the less coherent utterances of the original Kant. The Hegelianising of Kant may be best illustrated from the section on the 'Deduction of the Categories,' as the most centrally important part of Kant's work. Here it is noteworthy that Green follows the first edition in preference to the second. The former undoubtedly contains statements which seem to make powerfully for the Hegelian view of the unity of apperception and its relation to reality. Kant there speaks, for example, of the transcendental object as a mere *x*, and defines it as "that which prevents our cognitions from being determined at random or as we choose, and determines them *a priori* in a certain fashion". It may well be argued that the predicates which he applies to the object here are no more than would be equally applicable to the transcendental Ego. Hence Green concludes: "With Kant, the transcendental object and transcendental subject are the same. The presence of an eternal and unchangeable self to all phenomena at once makes them an order of nature and makes our experience of them one connected system. 'Order of nature' and 'unity of experience' are only two aspects of one and the same function of the eternal Self, which we call object or subject, according as we look on one or the other of these aspects" (p. 28). The main objection to such a statement, in my view, is the "With Kant" with which it opens. It is true that Kant, in the last paragraph of the passsge referred to, does speak in terms which bear a certain resemblance to this position of Green's. That is, having for the time being our rational experience alone in view (and seeing, in his own words, that, so long as we so restrict ourselves, "the *x* which corresponds to our ideas (*i.e.*, the object), inasmuch as it must be something distinct from them all, is nothing for us"), Kant in this one passage identifies the objective reference which, *within experience*, we give to our ideas with the constitutive action of the apperceptive unity. But this is still far from attributing to the transcendental Ego the metaphysical place here assigned to it by Green. In reality, Green immediately finds it necessary to correct the too

sweeping implication of his words, for he goes on to say in his next paragraph :- "We have consciousness, then, of such object or subject. . . . Is it, then, the 'thing-in-itself'? Yes, according to Kant, it is that 'thing-in-itself' which renders possible 'nature in the formal sense'. It seems as if, when he wrote the first edition of the *Critique*, he was coming to regard this as the sole 'thing-in-itself,' but the final view, into which he had settled down when he wrote the *Prolegomena*, was that there was another 'thing-in-itself,' which renders nature possible in the material sense, the cause of our sensations." This is an admission eminently satisfactory to the historical student, because it disposes incidentally of the view by which the ascription of Hegelian positions to Kant is sometimes justified, *viz.*, that, beginning with certain untenable presuppositions, Kant gradually wrote himself clear and left them behind, though they remain stranded here and there upon his pages like glacial relics of a prehistoric time. But this is so far from being the case that Kant, as he proceeded, settled more and more into a view which dogmatically asserted the most obnoxious of these presuppositions. In fact, the view which 'sympathetic development' ascribes to Kant is one which *we* may base upon a few passages of his writings, but which I gravely doubt whether Kant ever so much as thought of, even in writing these very passages. This is evident enough (as virtually admitted by Green) in the case of the transcendental object, but (though it may appear more shocking to say so) there seems equally little reason to doubt that the doctrine of Kant's English followers on the subject of the transcendental Ego departs equally widely from anything that ever entered into the mind of Kant himself. Green, for example, expressly identifies the unchanging subject of thought—the "eternal self" which makes one "cosmos of experience"—with God, the absolute or divine self-consciousness. Now I am not here discussing whether such an identification is or is not necessary in the interests of consistent thinking, but surely, in view of other integral parts of his system, we cannot imagine such an idea to have been present to Kant himself. God was conceived by Kant in the deistic fashion of last century as a completely transcendent Being, whose main function, according to the Kantian ethics, is to superintend the ultimate adjustment of happiness to virtue. We search Kant in vain for any *rapprochement* of the human consciousness and the divine. He even makes light of the unity of apperception, calling it 'a merely logical unity,' and 'the poorest idea of all'. For, even in the case of the human subject, this unity does not represent for Kant the noumenal existence of the man. Just as he retained a thoroughly mechanical conception of God, so he seems to have believed, somewhat as Locke did, in a quasi-substantial existence of numerically separate persons, as things-in-themselves, whose function, as it were, the unity of apperception may be conceived in each case to be. It will be understood that I do not for a moment put forward this

view against the other in respect of its philosophical tenability; but when Agnostics and Idealists are alike found identifying their position with Kant's, I think it might be in the interest of clear thinking to disengage our arguments and results from anything more than a historical dependence on the inextricably tangled (though, of course, infinitely valuable) system of Kant.

These remarks do not at all affect the value of Green's work, which, by the freedom of its criticism, does to a large extent so disengage itself. Some of his criticisms will be very helpful to the student struggling among Kant's multitudinous distinctions and divisions. Take, for example, his remark that "the 'Transcendental Analytic' would have been much simpler if the account of the categories prior to the 'Deduction' had been omitted". "What is fancifully called the 'Deduction of the Categories'" deduces in reality only the unity of apperception, and the real deduction of the categories is given, so far as it is given at all, in the 'System of Principles'. The account of 'Schematism' would then disappear, the imaginary necessity for such a contrivance arising solely from the fact that the categories are supposed to be first of all independently, or, in Kant's language, 'metaphysically,' reached as pure logical conceptions, and only afterwards adjusted to the sensuous matter of experience. The Section on "The Empirical Reality of Time" (pp. 72-81) is particularly interesting from the independent development of the discussion. Green here touches a question which arises out of the Kantio-Hegelian as it did out of the Berkeleyan idealism. "Admitting an eternal thinking subject as the *correlatum* of nature, without which nature could not be, what is nature for such a subject?" "The answer is," Green proceeds, "it is just what it is for our reason, which *is* this eternal thinking subject." This is a position akin to that of Berkeley in *Siris*, when he says that "there is no sense nor sensory, nor anything like a sense or sensory, in God". But Green goes on to admit that "when we come to say what it [nature] is for our reason, we cannot get beyond the mere formal conditions of there being a nature at all," these formal conditions being embodied in the following "formal definition of nature": —"For reason . . . nature is a system of becoming which rests on unchangeable conditions". Does not this seem to eviscerate the universal consciousness of what might be termed broadly the content of reality? Moreover, in spite of the elimination of sensibility, it appears in the sequel of Green's discussion that actual 'changes' or 'events' have meaning only for a sensitive consciousness. "Sensibility is the condition of existence in time, of there being events related to each other as past, present and future" (p. 79). Consequently, as the condition of "changes prior to the existence of feeling on earth or anywhere else," Green seemingly postulates what he calls "an eternal sensibility"—"a sensibility which never was not". The precise meaning of these expressions, however, is not quite clear, and no further de-

velopment is given to this attempt to bring eternity and time together.

The lectures on Kant's Ethics (pp. 83-155), with which must be taken the later-placed discussion "On the different senses of Freedom as applied to Will and to the Moral Progress of Man" (pp. 308-333), are connected in the closest way with the discussions of the *Prolegomena to Ethics*. So far as they simply reinforce Green's own ethical doctrines, they call for no further criticism in these pages. But the comments upon Kant's positions will be very useful to the sympathetic student who, in spite of the best 'wish to believe,' feels himself pulled up from time to time by some of Kant's characteristic doctrines. Thus, for example, the notion that the moral will must be determined by the mere idea of conformity to law, from which all relation to a 'matter' or object is excluded, is admitted to be an impossible demand. "When Kant excludes all reference to an object, of which the reality is desired, from the law of which the mere idea determines the good will, he means all reference to an object *other than that of which* the presentation *ipso facto* constitutes the moral law" (p. 131). In fact, Kant himself in the *Metaphysic of Ethics* implicitly founds the possibility of absolute law upon the existence of an object of absolute worth. Again, Green modifies the rigour of the Kantian antithesis between "the desire for pleasure on the one side (in which case the will is 'heteronomous') and desire for fulfilment of the moral law on the other (in which case alone, according to him, it is 'autonomous')." Moral action involves "the presentation by the agent of himself as an absolute end," but the self thus presented is not "an empty and abstract self" —a mere "subject of law"; it is "a determinate self"—a self determined according to the man's dominant interests. "The conceived object, to which in willing he seeks to give reality, may be a state of himself as enjoying certain animal pleasures, or a state of himself as fulfilling some vocation dimly conceived as belonging to him in a divine plan of the world. . . . Or it may be (and more probably is, most men being neither sots nor heroic philosophers) some state of himself as filling a certain position in relation to his family or neighbours or fellow-citizens, and finding happiness therein. Or it may be an object which could not naturally be described as a state of himself at all, but which is still determined by the relation in which he places it to himself, the ruin of an enemy, the happiness of a beloved person, the success of a political movement, the painting of a picture, the writing of a book, the improvement of his neighbours, the conversion of the heathen." In point of fact, the idea of an absolute and universal moral law arises only at an advanced stage and as the result of *reflection upon* moral experience. Among other points to which attention may be drawn is the discussion of the different senses of the term Freedom in Kant, and in connexion with that the criticism of Kant's distinction between the empirical and the

intelligible character. Kant tends, according to Green, to identify freedom with determination by reason, though he "scarcely seems fully to realise his own identification" (p. 119). Green also points out a variation on Kant's part in the use of the term Will. Using it at first in the generic sense, which includes the good and the bad, the heteronomous as well as the autonomous, will, he came in his later moral writings to use it in the specific sense of the rational will, opposing it in this sense to '*Willkühr*'. On pp. 147 onwards, we have an interesting discussion as to the sense in which it is true to say of the law that it is self-imposed, and as to how far the recognition of it as self-imposed is present, or indeed desirable, in the unsophisticated man. The first part of the discussion again raises the question of the relation of the human to the divine consciousness.

The logical division of the volume is in some respects less valuable than it might otherwise have been, from Green's inveterate habit of going back to fundamentals. Thus in the first section on "The Logic of the Formal Logicians," *i.e.*, Hamilton, Mansel, &c., we are soon led away from the immediate subject and find ourselves in the midst of the proof, so familiar to us in Green, of the thought-constituted nature of reality. In another respect, however, this section is specially interesting from the embarrassment which facts of feeling as such evidently cause to Green's theory. "Undoubtedly," he says, "there is something other than thought. Feeling is so" (p. 181). "The world before there was sentient life was not what it is to us as sentient; the world of conditions of feeling is not to intelligence (even our intelligence) what it is to us as feeling" (p. 180). "We have admitted that the sensitive act is other than any such relation as thought constitutes, and that it is necessary to the reality of the natural thing. It is an event in time, and, as such, the absolute ἕτερον to self-contained thought" (p. 187). Then arises the same difficulty which we had before in reference to the pure thought of the universal consciousness. "Can relation to sense, as a fact or reality," he asks in a note, "exist for a consciousness not sensitive? If not, how do facts of nature exist for God?" "Is not the notion," he answers in the text, "that an event in the way of sensation is something over and above its conditions, a mistake of ours, arising from the fact that we feel before we know what the reality of the feeling is, and hence continue to fancy that the feeling really is something apart from its conditions? . . . For the only sort of consciousness for which there is reality the conceived conditions are the reality" (pp. 190-1). But if so, what becomes of the reality and otherness formerly admitted to belong to feeling *quâ* feeling as a fact *in rerum naturâ?* From the half-problematic form of this answer, Green would seem to be but indifferently satisfied with his own solution.

In criticising Mill's *Logic*, Green takes up first the question of the Import of Propositions, concluding that Mill is right in hold-

ing that such judgments as 'gold is yellow' are not merely an analysis of a nominal essence, but express belief in regard to an outward thing. The doctrine, though substantially correct, is however inconsistent with Mill's Lockian metaphysic of the relation of the mind to reality. In Section B (of Names) it is maintained that Mill's distinction between singular and general names is more properly a distinction between singular and general propositions. Proper names, according to this view, are in themselves mere sounds representing no mental act at all, but "to the person who uses them they are on every occasion on which he uses them specially connotative". Section C attacks Mill's substitution of a classification of existences for a theory of the categories, and easily shows that the Kantian categories are implicitly assumed in Mill's account. Sections D, F, G, H, are mainly occupied, as already mentioned, with Kantian discussions, and with the author's constructive theory. The criticisms passed upon Mill may be easily deduced therefrom, and are of minor interest. In Section I (Syllogism) he comes to closer quarters, with fatal results to Mill's general theory of inference, and his theory of the syllogism in particular. "Is the 'particular' of which an attribute is asserted in the conclusion one of the particulars which have been already observed to have this attribute, or is it not? If it is, then there is no inference to it. . . . If it is not, how is the inference justified? How is the inference valid unless the ἐπαγωγή is διὰ πάντων? and if it is διὰ πάντων, how is it inference at all?" (p. 274.) In point of fact, inference has "nothing to do with how often an event happens, but only with the question what it really is that happens in each event. . . . Once know what death really is in the case of a single man, *i.e.*, the conditions on which it depends, then I learn no more by seeing any number of men die. . . . No doubt, in the process of ascertaining what these conditions are, a great number of cases may have to be observed in order to the exclusion of unessential circumstances; but the observation of such cases in order to ascertain what really happens, what are the conditions of the given phenomena in each, is absolutely different from the observation which from the constant occurrence of an event leads to the expectation of its continuance" (p. 275). "Inference lies, not (as Mill says) in the generalisation from observed instances to all, but (*a*) in the discovery of the real conditions of the observed instances; (*b*) in the discovery whether other apparently like instances are really like. Given the real similarity of the other instances, there is no inference to them" (p. 277). In the following section, K, the same line of thought is applied to Mill's account of Induction. "The whole business of science," it is well said, "is to substitute real identity (identity of conditions) for mere similarity between phenomena." Mill's confusion in regard to the axiom of the uniformity of nature (better named, according to Green, "the unity of the world") is successfully exposed. In the old contro-

versy between Mill and Whewell, as to whether conceptions are abstracted from facts or superinduced upon them, the dispute, it is pointed out, turns on a false view of the relation of the mind to facts. "When a conception is said by Mill to be 'abstracted from facts' or 'from phenomena,' this can only mean that it is abstracted from our observations of facts, from the facts as they are for the consciousness of the person who is supposed to make the abstraction" (p. 291). Such a statement, then, "puts the cart before the horse; till the phenomena have been connected by such a conception, they have not the character from which it can be abstracted" (p. 292). The gist of the last section, L, on Causation is a refutation of the Humian account of causation, simply by the denial that any idea or object *can* be "considered in itself". "The '*minimum intelligibile*' in the way of feeling (the only experience which amounts to a knowable fact) is a feeling related to another as a changed appearance or affection of something of which the other was an appearance or affection. . . . The conception of this something develops, as everything is found to be relative to another, and to derive all that it is or has from that relation, till the 'something' becomes 'nature' (of which Lewes has at last discovered that to say it is uniform is an identical proposition), which remains the same in all its changes" (pp. 301-2).

ANDREW SETH.

Esquisse d'une Classification systématique des Doctrines Philosophiques. Par CH. RENOUVIER. 2 Tomes. Paris: Au Bureau de la *Critique Philosophique*, 1885, 1886. Pp. 490, 420.

The historical view of systems that makes up the larger part of these volumes, itself the outcome of some of M. Renouvier's most original ideas, has enabled him, in his return from history to criticism and construction, to express these ideas with renewed force. Both as a history of philosophy from a clearly defined point of view, and as the latest statement of M. Renouvier's own philosophical position, the whole work is of the highest importance and interest.

The history of thought is viewed not as a series of approximations to a final doctrine which includes all truth in itself, but as a process in which antagonisms become more and more definite; till at length the theses and antitheses of the chief antinomies of philosophy are marked out into two coherent systems, opposed to one another in detail and as wholes. From the beginning of his philosophical studies, M. Renouvier tells us, he was struck with the inward presence of antinomies in the greater philosophical systems. He found that in a small number of systems, as in those of Nicholas of Cusa, Giordano Bruno and Hegel, the attempt was openly made to solve all antinomies by a denial of the applicability of the law of contradiction to real being; and for some

time he was under the fascination of this idea, and himself tried to construct a philosophy that should reconcile all doctrines by combining their contradictory positions. With this view he was never able quite to satisfy himself; and at last he decisively rejected it. The result of this decision was the conviction that from the beginning of philosophic thought truth has been on one side of each of the great philosophic controversies and error on the other, and that the chief philosophical directions remain always the same. There has been progress in accuracy of view of details, in understanding of opposing positions, and in the statement of these positions and their logical grouping; but none of the chief directions has ever succeeded, during a period of philosophical freedom, in excluding the others; and since differences of personality become accentuated instead of disappearing, it is not likely that by free consent at least any of them will ever finally gain the mastery. For it is personality that determines the character of every philosopher's view of the world as a whole. Each view, the true view as much as the false, is a belief, determined partly by the "passive factors" of circumstances and temperament, but ultimately by an act of choice. The great opposing systems which combine in logical order the theses and antitheses of the historical antinomies, and are now in process of being definitely formed, are, on the one side, a Pantheism based on the larger hypotheses of science carried beyond scientific limits, and laying claim to the certainty of "evidence"; on the other side a Theism based on Kant's postulates of the practical reason, and professing "belief" not "evidence" as its ultimate ground of certainty. To the latter system the author proclaims his own adhesion.

By thus making plain to the reader which side he takes, M. Renouvier has hoped to gain in impartiality, and he has succeeded. A writer who is attracted by strong and decided affirmations and negations, and who sees in the history of philosophy the tendency of systems to become more individualised rather than the tendency to compromise and conciliation, is, besides, under no temptation to tone down his opponents' views, and can do justice to them without finding in them resemblances to his own. M. Renouvier's treatment of views opposed to his own is frequently even more than impartial. The intellectual sympathy which he displays with the pantheistic ideas of the early philosophers of Greece does not disappear when he comes to deal with modern philosophers; but what has struck him especially is the far-reaching character of the ideas thrown out at the opening of each period of speculation, and in times of revolutionary change. We are wrong, he remarks, in thinking the height of abstraction reserved for an advanced and complex state of intellectual culture. Except in morals, the true initiators, and often the most profound, in that their views were more exclusive and more absolute, were the philosophers of the first period of Greek

thought. And in this period, as M. Renouvier fully admits, the predominating speculative tendency was pantheistic.

The pantheistic doctrine which was predominant in the earliest Greek speculations, which has found its most rigorous expression in Spinoza, and which is equally the doctrine of Hegel and of the contemporary philosophy that claims to be based on physical science, is, when quite consistently developed, a doctrine of the Thing or permanent substance of which all personality is a passing mode, as opposed to the Idea or phenomenon which has no reality except as part of a consciousness; of the Infinite as opposed to the Finite; of Evolution as opposed to Creation; of Necessity as opposed to Liberty; of Happiness as opposed to Duty; and of Evidence as opposed to Belief. This sixth antinomy was the last to receive clear expression. Till Kant, with hardly any exception, the only positions as to the criterion of certitude were those of "evidence" and "scepticism". This last doctrine left the practical choice to be determined, not, as it must be according to the true doctrine of belief, by reasons which although not purely intellectual are valid for all men, but by custom and authority. According to the temperament of the sceptic the attitude finally assumed may be—to take typical examples—either that of Montaigne or of Pascal. Once the doctrine of a belief determined by active as well as passive factors of the personality and finally not on intellectual but on moral grounds,—in its distinction equally from sceptical suspension of judgment and from a supposed "evidence" or "vision" that gives assent in spite of the will,—has been clearly disengaged, all the other theses and antitheses are seen to depend on the position taken up with regard to this antinomy. Hitherto they have always, even in the most rigorous systems, been combined with more or less inconsequence. Till quite recent times Idealism, for example, had not received accurate expression; there always remained a mixture of realism, of the doctrine of the Thing or "subject" as it is in itself apart from consciousness. And the progress to true idealism has been accomplished chiefly by means of the works of the modern empirical school, more favourable to the intellectualist doctrine than to the doctrine of belief, and by mediæval Nominalism, the scholastic form of empiricism. Again, the doctrine of "the realised infinite" has always formed part of Christian theology, having got there by a confusion of the idea of infinity in the sense of moral perfection with the infinite of quantity in space and time. Yet logically this leads to the pantheistic doctrine of the infinite and eternal substance, and to the denial of an absolute beginning of action, that is, of real creation and of free-will. By another inconsequence, the ethical doctrine of the Stoics and of Spinoza was a doctrine of Duty, an "ethics of Reason," essentially identical with the Kantian ethics, and not a doctrine of happiness such as ought to have followed from their system of pantheistic evolution. The definite statement of the antinomy

of "intellectualism" and of the "practical reason" removes these and other inconsequences, and makes the constituent propositions of the two systems arrange themselves at last in perfectly logical order.

Regarded metaphysically, M. Renouvier's doctrine is a phenomenism like that of Mr. Shadworth Hodgson. The difference between the two doctrines consists chiefly in this, that Mr. Hodgson follows more the tradition of the English experiential school, M. Renouvier that of the school of Continental rationalism. At the same time Hume, as represented by the *Treatise*, has had an influence on M. Renouvier comparable to the influence of Kant on Mr. Hodgson. In their practical outcome the two doctrines are not unlike, both philosophers having accepted from Kant the distinction of the "practical" and the "speculative" reason. Neglecting minor differences, then, let us ask: What is phenomenism as distinguished from other doctrines that also claim to be idealistic?

According to M. Renouvier, the ancient idealistic doctrines, such as that of Pythagoras, which tried to account for experience by the limiting mind, as opposed to unlimited matter, which was in various forms the principle of the Ionians, failed for this reason, that they took one particular formal element in mind and "hypostasised" it. "Number," the principle of the Pythagoreans, although a formal mental principle, became, when viewed in isolation, a "thing," just as much as the atom of Democritus, the most purely material of all the "physical" principles. On the other hand, the atom, although regarded from the first as an element in things, was not a datum of sense, but the result of an abstraction, and thus had a sort of mental character of its own. The two conceptions, therefore, opposite as they seem, differed little in effect. And instead of giving their ultimate explanation of things in terms of personality, the Pythagoreans, and the idealist schools of antiquity generally, fell back into a system of pantheism. With the Pythagoreans, for example, all phenomena became parts of a "mathematical evolution of the multiple and the one". In modern times the doctrine of Hegel—described by M. Renouvier as "a Platonism with Eleatic basis, joined to an attempt to trace the history of the Idea confounded with the history of the world of phenomena"—illustrates the same tendency. The "thought" of Hegel is an element in mind hypostasised; and, when the bias of the more orthodox disciples of Hegel is got rid of, thought becomes a "thing" figured as evolving itself necessarily and as having personality for a mere temporary phase. Hegelianism thus comes not to differ intrinsically from a materialistic doctrine of evolution.

From these criticisms of other forms of idealism, it appears that what distinguishes the phenomenist doctrine is the refusal to regard any one element in mind, however capable of distinction by analysis, as having a real existence by itself apart from the rest.

That is, the distinguishing feature of phenomenism is its principle of "the relativity of representations" to one another. It pushes this principle to the extent of affirming that, since actually every phenomenon appears under the form of personality, there can be no ultimate philosophical explanation of things otherwise than in terms of personality. A doctrine such as that of Lotze and his disciples, which makes personality ultimate in its explanation of things, and is idealistic as regards the external world, would nevertheless be rejected by a phenomenist because it retains "the substance of mind"; its monads being miniatures of the individual mind hypostasised. The doctrine that speaks of "elementary feelings" as things-in-themselves does not, like monadism, assume a substance of mind under the name of "the soul"; but from the phenomenist point of view it is realistic as the Hegelian doctrine of "thought" is realistic, because it hypostasises the material element in mind as Hegelianism hypostasises the formal element; and of course it does not place personality at the beginning of things.

Except on one point, M. Renouvier concedes that the pantheistic system, although incapable of demonstration, is theoretically impregnable. The one point where it can be assailed on grounds of pure logic is its assertion of a real infinite of quantity, which follows from "the doctrine of the thing" as opposed to "the doctrine of consciousness". "The actual infinite number" required by the existence of an infinity of distinguishable phenomena in space or time is self-contradictory. The law of contradiction, however, in its application to realities, has been denied by consistent partisans of the infinite; and to assert it as universally true is, like any other proposition of the kind, an act of belief. Even in this case, therefore, it is in the end moral considerations that must determine the choice of the thesis or the antithesis. From the point of view of the doctrine of consciousness there can be no question of any actual existence that is other than finite. This truth was expressed by the Pythagoreans in their theory of the limit; but they in part destroyed its effect by retaining "the unlimited" as a kind of matter upon which form is imposed. The doctrine of the infinite and absolute, as it has asserted itself in Christian theology, is, however, a falling-off from what we may regard as the typical Greek conception of reality as belonging to a limited, ordered universe, and of the unlimited as essentially unreal. The "realised infinite," M. Renouvier shows, has no place in mathematics. And it is there, if anywhere, that we should expect to find it; since mathematicians use a terminology that seems to imply infinites of all orders. The notion of a real infinity, however, is not only not employed by mathematicians; it is no more required for the philosophical explanation of any mathematical or other scientific conception. Everything that can be expressed in terms of consciousness, that is, everything that can be thought as real, is finite. Consciousness itself, per-

sonality, is essentially finite. The "doctrine of consciousness" requires that phenomena should have a beginning, but not necessarily that they should have an end; for the absence of a beginning implies a past eternity filled with events, that is, a "completed infinite"; but future eternity is supposed never to be completed; the series of phenomena, even if it should never have an end, will always be capable of expression by a finite number. Phenomena have had their beginning in a personality, which, like other personalities, is necessarily finite. The universality of law —the resemblance of the order of phenomena in different persons —requires that there should be one supreme Deity: M. Renouvier now regards this argument as conclusive against the possibility he had formerly left open for polytheism. The Deity must be held to be limited in knowledge by "the real contingency of futures". For, corresponding to creation in the universe as a whole, there is a real beginning of a new series of phenomena, a cause that is not also an effect, in certain decisions of the human will. Thus the doctrines of the finite, of creation and of indeterminism form a connected group opposed to the doctrines of the infinite, of evolution and of the absolute determination of all phenomena as parts of an eternal series; and these groups of doctrines attach themselves on the one side to "the doctrine of consciousness," on the other side to "the doctrine of the thing".

By "evolution" M. Renouvier understands here "philosophical" as distinguished from "scientific" evolution. The special evolution-theories of the sciences, like other special scientific theories, cannot logically, he holds, be extended under the name of "science" to the whole order of the world. "Science," when it is anything more than a collective name for "the sciences," means one of the two opposing philosophies; and this philosophy has no right to claim for itself, as it does by assuming the name of "science," the certainty that each of the special sciences has within its own limits. Of the philosophical doctrine of evolution there are two forms—the "statical" and the "dynamical". Spinoza's doctrine of modes is a real evolution-theory of the first kind, although it makes no attempt to express in a single formula the law of the series, which it assumes, of absolutely determined and eternally changing phenomena. Theories that are evolutionist in the more special "dynamical" sense, such as that of Leibniz—which was the first to combine the ideas of physical evolution and of human progress—introduce the conception of an end towards which the evolution of the world is the necessary movement. They are less consequent than Spinozism; since they have to borrow the idea of end from the doctrine of consciousness.

Immediately connected with the antinomy of necessity and liberty is that of happiness and duty. No doctrine of necessity, M. Renouvier contends, is consistent with a morality that makes the correlative conceptions of "duty" and "right" fundamental.

For there can be no "obligation" to do that which, by the mere fact of its not being done, is shown, according to the doctrine of necessity, to have been impossible. Determinism reduces all moral questions to questions of selecting the right means for attaining ends fixed by personal taste. The end is not necessarily egoistic; but if happiness is the only conceivable end, man has, so to speak, "the right to egoism". The sentiment of altruism can only be appealed to so far as it exists; and it can never acquire the character of an imperative. Eudæmonists, therefore, for the most part, aim at producing by education artificial associations of ideas of the good of society with ideas of personal good. This supposes control of public opinion and of the machinery of education by those in whom the idea of good happens to have taken the altruistic form; and this control must be exercised with a view to forming all minds according to a single type. The eudæmonist morality of "benevolence" or "sentiment" thus lends itself naturally to theories of political and social despotism. And that the putting of some "good," however elevated, in place of the conceptions of duty and right, has actually had such theories for its consequence, is seen in the history of speculations that make the idea of good supreme, from Plato's Republic to the political system of Comte. J. S. Mill perceived this tendency of "benevolent utilitarianism" and tried to avoid it, but without success, so far as he argues from his own theoretical point of view. He perceived also the unsatisfactoriness of a morality that depends on artificial associations dissoluble by analysis. In Mr. Spencer's ethical doctrine there is a falling back on the idea of an inevitable progress of the human race, as the means of bringing about a spontaneity of benevolent sentiment; but in the meantime there is no foundation for really ethical "injunction". As in other utilitarian systems, when there is no question of enforced obedience to external standards all depends ultimately on personal taste. It is the same with the morality of pessimism. Schopenhauer, for example, who makes "pity" take the place of the "sympathy" of optimistic utilitarianism, entirely rejects the idea of duty. Essentially, contemporary optimism and pessimism are at one as to the ethical standard. The opposite ethical doctrine is to be found in the Stoics and Spinoza; but it received for the first time perfectly accurate expression in Kant's *Practical Reason*. The idea of duty is implicit in Stoicism as "conformity to the order of the universe"; that of liberty as "independence of external things". On the one side, however, there is as yet no true idea of obligation, and on the other side there is theoretical determinism. So far as Kant retains the idea of absolute determinism in the phenomenal world there is an inconsequence in his system also; but in his ethical formula, the categorical imperative, he has corrected both the principal defects of Stoicism. Kant's great achievement was to make ethics independent of every system of metaphysics. In

consequence of this he was able to found his metaphysical doctrine on his ethics, substituting practical "postulates" for theoretical "dogmas". The relative positions of practice and speculation are thus reversed. There is no longer any apparent dependence of morality on cosmical physics and the law of evolution of the world; "conformity to nature" has become explicitly what it always really meant, conformity to the nature of reason. Duty has been rigorously defined, and the doctrine of happiness placed in its true dependence on the morality of duty.

For a doctrine of happiness is after all necessary. The question of optimism and pessimism is not indifferent to philosophy, but is a question which, once it has been raised, requires a decisive answer. Now the Kantian doctrine enables us to view happiness as dependent on our own attitude towards the world, not on a previous determination of the nature of the world. There are two beliefs that it is theoretically possible to hold: the belief that duty and happiness are in the end brought into harmony; and the belief that the idea of justice has no application in the universe as a whole. We are under the moral obligation to choose that belief which will enable us to act best. This position is fundamentally that of Pascal's "argument of the wager". The necessity of acting renders it impossible to refrain from choosing; and we must choose the alternative on the side of which our highest interests are placed. There is this defect in Pascal's argument—that one particular doctrine, the doctrine of the Catholic Church, is arbitrarily taken as the subject of the wager. An opponent can object against Pascal the merely local and temporary character of this doctrine; and then there is the scientific test of historical evidence. The argument of Pascal, however, can be thrown into a universally valid form. It has been "reduced to good sense" by Locke, and cleared of even the appearance of making an appeal to "the lower interests" by Rousseau. The principle of its reduction to a valid form is that we must seek "the maximum of security in the minimum of determination of doctrine" (ii. 334). Kant's postulates of the practical reason—God, Freedom and Immortality—are found to be at once necessary and sufficient. Freedom is required in order to make moral obligation possible; immortality—or at least continuation of life after death—to make possible the realisation of the ideal of justice in the universe; theism, inferred, as we have already seen, from the necessity of a creative act and the universality of law, is required as a security for the final ordering of the universe in accordance with the principle of justice. A necessary part of the system of the postulates is that physical evil should be traced to moral evil. This is made conceivable by the doctrine of free-will as "a gift" which could not be conferred without the power being left to the creature to choose wrong as well as right. By the existence of a real free-will the sense of sin and its reality are also explained.

We come at last to the antinomy of evidence and belief, on which, according to M. Renouvier, everything else depends. Real indetermination of actions, he maintains, requires real indetermination of judgments. This doctrine of the indetermination of judgments is traced to Rousseau. Rousseau's ethical doctrine, although superficially it looks like a "doctrine of sentiment," is really, M. Renouvier contends, a "doctrine of the practical reason". The admiration of Kant for Rousseau is well known; and M. Renouvier traces Kant's optimism—in viewing the history of the world as determined in accordance with the postulates—to Rousseau, as he finds in Voltaire the literary inspiration of Schopenhauer's pessimism. That belief—the free choice of a judgment as to the ultimate nature of things—is something more profound than "evidence," must be the view of those who hold to the doctrine of consciousness. To affirm the existence of other personalities and of the uniformity of nature is to go beyond what is given in the actual phenomena. We are not, indeed, without motives for believing; there is evidence that suggests belief; but there is also an active factor. The mind in part creates the truth to which it gives its assent, as it is creative in volition. Those, on the other hand, who decide for the pantheistic system of the eternal evolution of an infinite substance, always hold in some way, even when, like Mr. Spencer, they speak of ultimate "beliefs," that they are asserting a truth forced on the mind from without, or given in a sort of intellectual "vision," a truth of which denial is impossible. But to anyone who speaks of universal beliefs, of propositions the negation of which is inconceivable, the history of philosophy is a sufficient reply. There is no proposition, not even the law of contradiction, of which the application to real being has not been denied by some philosopher. The appeal to "evidence" is therefore only a statement of the belief of a particular person that he possesses a certain kind of insight which, it must be supposed, he has by necessity, while others are necessarily in error.

Since M. Renouvier makes everything depend on his doctrine of belief, we must examine this doctrine closely before proceeding to criticise any other part of his system. The choice of an ultimate belief, in M. Renouvier's view, is an act of free-will; but he does not represent the doctrine of belief as absolutely bound up with indeterminism. Indeed he shows, in more than one passage, how a determinist may recognise the active factor in judging. Indeterminism being excluded, there seems to be no reason why an opponent on ultimate philosophical questions should not admit the essential part of M. Renouvier's contention, *viz.*, that there is a personal element in all systems of metaphysics; that in this element there are active as well as passive factors of belief; and that whenever we go beyond the mere present phenomenon there is a "wish to believe" one proposition rather than another, determined either by intellectual or practical

interests. All beliefs are of course subject to the tests of verification and of consistency. Beliefs that cannot bear these tests must disappear sooner or later, whether we wish it or not. M. Renouvier does not deny this; but to anyone who should insist that for these reasons "evidence" is more profound than "belief," he would reply that there is more in the great philosophical systems than can be completely submitted to either test. The pantheistic doctrine which is the final outcome of the set of positions opposed to his own is, he admits, as consistent with itself as the doctrine of the practical reason. To the positivist or agnostic objection that there is no need to choose between opposing systems of metaphysics at all, he replies that not to choose would be to take custom instead of reason for the guide of life; but that those who use this argument have really made their choice, and that they imagine themselves to have "evidence" sufficient for the refutation of the view they practically reject.

To the belief at which M. Renouvier arrives on the ground of the Kantian postulates, it may be objected, from the practical point of view, that the construction is too "problematical" to have any real influence on conduct. The objection he himself makes to Pascal's argument might also be brought against it. This type of theism, it might be said, is after all only the ghost of a particular historical religion, not really, as is contended, "quod semper, quod ubique, quod ab omnibus". Its special affinities are seen by M. Renouvier's regarding as possible an alliance between "the Criticist philosophy of consciousness" and a Christianity cleared of the dogmas of "absolutist" and "infinitist" theologians. A religious creed going beyond the "necessary and sufficient" postulates of the practical reason, he allows to be legitimate in its own sphere. Although it may not be confounded with philosophy, it may be held as a kind of "philosophic faith". But,—not to pursue these considerations of detail,—there is a fundamental objection to the whole method of "the practical reason".

M. Renouvier, it must be remembered, contends for an element of active desire in the affirmations of *both* the great philosophic parties. In the case of the party opposed to his own, he often speaks of this desire as having its motive in intellectual as distinguished from practical interests. Yet, rather strangely, he never definitely asks whether the desire that expresses itself here may not be that by which exclusively we ought to be influenced in the decision of the last questions of metaphysics as of the first questions suggested by scientific curiosity. He never seems to conceive it to be possible that anyone who has seen that there is active choice of belief should still maintain the primacy in metaphysics of the theoretical reason; should regard the introduction of ethical considerations at the point where the highest speculative questions are reached as being just as irrelevant as it would be in physical science. The exact omission that is made is seen most

clearly in M. Renouvier's view of Spinoza. An "inconsequence" is detected in Spinoza's passage from his pantheistic metaphysics to an ethical doctrine of an elevated kind. The moral emotion that finds expression in the ethics, it is implied, ought not to have been excluded from the determination of the metaphysical doctrine; since it has been excluded, however, its coming in afterwards is unjustifiable. But, according to M. Renouvier's view, Spinoza's theoretical doctrine must have been in part emotionally and actively determined; for no doctrine escapes this necessity. If it was not determined by an ethical emotion, by what kind of emotion, then, was it determined? Clearly an incomplete enumeration has been made of the elements of Spinoza's philosophy. Account has been taken of the high moral emotion as well as of the passionless analysis; what has been omitted is the "amor intellectualis,"—the desire for perfect completeness of explanation by purely theoretical and "immanent" principles. But is not this the properly philosophical emotion? And does not its dominance in what M. Renouvier calls the "intellectualist" systems furnish a presumption that these, and not the "practical" systems, have given the right answers to the perennial questions of philosophy? The emotion directed to practice has its scope in the discrimination of right and wrong actions or dispositions. The philosophical emotion is an impulse towards what M. Renouvier himself calls "the ideal of science". Can any reason be given why, when we are approaching this ideal, we should be turned back from it by views of practical utility? It is not as if there were no positive impulse conflicting with affirmations made in the name of the practical reason. If this were so, we should have remained for ever absolutely under the dominion of practical considerations; the idea of a disinterested view of the universe would never have occurred to us. But, when this idea has once presented itself, has not "the practical reason" the appearance of being in intellectual things something of an interloper?

Of course philosophy, if it is to be worthy of the name, must somewhere make a return on practice, so as not to abandon life to the guidance of custom and unreasoned opinion. But M. Renouvier shows that it was exactly in antiquity, when the primacy of the theoretical reason was unquestioned, that philosophy applied itself most to practice and had most practical influence. After remarking on the comparative weakness of modern philosophy, beginning with Descartes, on the practical side—the *Ethics* of Spinoza being mentioned as an exception (ii. 123-4)—he explains the "intellectualism" (in this sense) of modern philosophy by the circumstance that the practical field was preoccupied, and that for a long time philosophers were warned off from it. The doctrine of "the practical reason," however, seems to be anything rather than the correction of this kind of intellectualism in modern philosophy. If philosophy, instead

of moving away from practice and viewing life impartially in order to return afterwards more effectively to its practical regulation, is to keep practical considerations in view in its metaphysical constructions, of two indemonstrable assumptions to take not the one that fits in best with the ideal already suggested by science, but the one that seems most likely to encourage action, this means that action, just as with the Pyrrhonists, will fall under the dominion of custom. For practical considerations introduced not merely as a stimulus but as a guide, prior to the final theoretical construction, can only be considerations depending on those unanalysed aims of which it is a function of philosophy to ascertain the comparative value; considerations, therefore, which from the first invalidate the critical function of philosophy with regard to practice.

This is the effect that a doctrine of the practical reason would seem likely to produce. Yet it must be acknowledged that there is no trace of this kind of effect on M. Renouvier's own practical philosophy. He applies an equally severe analysis to all the phrases that have been proposed as solutions of the problems of the ethical end and of the worth of life; keeping always in view the essential question of the aim of the individual. In the case of so consistent a thinker as M. Renouvier, it would be absurd to say that this is in spite of his theory, not because of it. We must try to find an element of truth in the doctrine of the practical reason that may be recognised by those who cannot in any sense accept that doctrine as a whole.

M. Renouvier, as has been seen, claims for Kant the merit of having been the first to make explicit the independence of the ethical end on particular systems of metaphysics. This truth is already present, he admits, so far as its effective application to conduct is concerned, in the "independence" of the Stoics, and in Spinoza's doctrine of freedom as action from within; but this "independence" or "freedom" is represented at the same time as a harmony with external nature, or even sometimes as "obedience" to nature, and is not defined strictly in terms of personality. M. Renouvier's analysis certainly enables us to understand better the fascination which Kant's formula has exercised. The truth of "the autonomy of ethics," we may be disposed to think, is expressed most clearly by M. Renouvier when he states it without reference to "the practical reason"; but that it should appear as if bound up with the Kantian doctrine is explicable. As soon as it is seen that ethics, although dependent for its working out on theoretical knowledge, is independent of any theory of the universe so far as the determination of its essential end is concerned, the preconceived idea of a subordination instead of a co-ordination between metaphysics and ethics takes effect in a simple reversal of their previous order. The doctrine of the practical reason, therefore, may be regarded as an exaggeration of the truth of "the independence of ethics".

The process that has just been described is aided by a certain incompatibility, not intellectual but emotional, of the theoretical and the ethical view of things. The ethical view of external nature must always be somewhat Manichæan. M. Renouvier has illustrated this by quotation of the celebrated passages from Mill's *Essay on Nature*. Those, on the other hand, who take by preference the pantheistic or intellectualist view, tend to pass from admiring contemplation of the order of the universe to assertion of its ethical perfection. This tendency is found, often unaccompanied by pantheism, in men of science. M. Renouvier contrasts, for example, Darwin's admiration of the law of survival of the fittest, regarded hypothecally as imposed by a creator, with Mill's reprobation of laws of conflict and mutual destruction among living beings. And more than once he shows the ethical superiority of Spinoza's system—attained, as he thinks, by the inconsequence of practically detaching ethics from metaphysics, when, according to Spinoza's principles, ethics should be subordinate—over the optimistic doctrines of Leibniz and Hegel. This last comparison may furnish a suggestion for solving the difficulty. Is not the remedy to distinguish clearly the ethical from the theoretical point of view, neither subordinating nor suppressing either ; to avoid, on the one hand, affirming an ethical end of the universe, and on the other hand to refrain from all attempts to find a moral justification of anything in the mere fact of its necessary determination according to universal laws? The refusal to compromise between points of view, each maintained as separately valid, is not really an inconsequence.

A distinction of points of view may help to clear up the antinomy of happiness and duty. We may admit that the conceptions of obligation, of duty and of right are not ultimate in ethics, without denying them all relative validity ; without declaring them to be mere illusions, and proposing to substitute direct seeking of the good of others under the impulse of sympathy or pity for the idea of justice as the foundation of the social order. There is no doubt that the systematic working out of some doctrines of "happiness," or of a "good" as the ethical end, has led to the theoretical suppression of personal freedom. This, however, is due to the special character of the good that is aimed at ; in these cases some social good is regarded as superior to the good of all individuals. Those who recognise, with M. Renouvier, that the highest good, while attained socially, must be a good for the individual, and that personal freedom is a condition of its attainment, are entirely at one with him practically, although they may make rights and duties deductions from the conception of good, not ultimate conceptions. To the making of obligation ultimate it may be objected that the word "obligation" implies command from some source ; and that a command, as M. Renouvier fully recognises, cannot be the ultimate reason in ethics. The empiri-

cal doctrines that trace ethical precepts to commands, of which he acknowledges the merit as attempts to account for obligation on egoistic grounds, justify the commands finally as means to a good that can only be attained by social action according to definite rules. But to these doctrines, and equally to those that make more use of sympathy, it is objected that everything depends on the individual taste and disposition. Suppose that anyone is not sufficiently sympathetic; or that, having recognised that the existence of the social order and (as part of it) his own action in accordance with justice, is on the whole to his personal advantage, he should nevertheless decide to evade the requirements of justice and gain a greater advantage, whenever he can escape detection: how is the moralist to convince him that he ought to act rightly? To this it can only be replied that voluntary acceptance of an ethical code does after all depend on the empirical fact of the social nature of man; and the degree in which men act according to the principles they accept, on the degree in which certain dispositions are present. The admission of this, with all its consequences, no doubt supposes a different conception of personal merit from that of Kant. On the whole, however, M. Renouvier's ethical antinomy, although some irreducible differences are left, does not seem to be quite so absolute as he contends.

Of the remaining antinomies there is at least one—that of finite and infinite—where those who are in general agreement with M. Renouvier would select the antithesis. The opposition of evolution and creation, which, when they are considered as philosophical doctrines, seems at first irreducible, can be solved by an evolutionist without absolute denial of creation. For creation, in the sense in which M. Renouvier attributes it to the human mind (with exclusion of indeterminism) may be perfectly well regarded as the outcome of a universal process of evolution. This explanation goes naturally with the admission in a certain sense of M. Renouvier's doctrine of belief. He himself is the first to admit that as regards the antinomy of "Thing" and "Idea" that heads the series, all schools of philosophy are now in a sense idealist, as at the beginning all were in a sense realist. To the contemporary "school of the ideal," represented in different ways by M. Vacherot and M. Fouillée, he takes up an attitude of opposition, on the ground that it denies in effect the existence of the ideal outside the human mind; yet he has affinities with that school. There is much resemblance, for example, between his view of the infinite and M. Vacherot's, although their affirmations about the reality of the infinite are quite opposed. Both philosophers bring out with great distinctness the opposition of the idea of perfection, which, as they see, must be that of the highest degree of definite order and clear consciousness, and therefore essentially finite, to the idea of unlimited extension or force, the *ἄπειρον* of Greek philosophy, chaos as opposed to cosmos. Again, M. Renouvier's re-statement of Pascal's "argument

of the wager" has something in common with M. Fouillée's doctrine of "risk" in action and speculation. It is true he does not end with doubt but with belief; yet belief, in distinction from knowledge, implies at least the possibility of doubt.

But although two types of thought may not be quite so clearly marked out as they ought to be according to the theory embodied in M. Renouvier's classification, it is only with the aid of a classification such as this that an adequate account can be given of the whole movement of philosophy. The idea of a perennial opposition of philosophic doctrines, and of increasing distinctions among them, is not that which historians of philosophy like best to dwell on; but now that it has been not merely stated and defended but made the central idea of a systematic classification, it ought to be recognised as at least as important an aspect of the truth as the more common idea of philosophic progress. And M. Renouvier does not, by a movement of reaction, deny the portion of truth that is in the conception of progress as continuous and in the same direction. He recognises the limitations it imposes on his own view, as well as those that are due to what he considers illogical mixtures of doctrines. One ground that a critic might take here is to contend that these mixtures are not all illogical, and that the divergence is really towards several types instead of only two. This would be a criticism in the sense of M. Renouvier's own doctrine. But whatever may be the view taken of the outcome of the classification, there cannot be any difference of opinion as to the value of M. Renouvier's work in detail. Every page of it is full of instruction. To its merits as history this is to be added, that it will compel readers who may have arrived at any fragmentary philosophic view of their own to consider carefully the bearings of this view with regard to the whole, and the direction in which it ought to be developed if they wish to be consistent.

It will be remembered that M. Renouvier finds one logical defect in the system of pantheism to which, as he holds, modern "scientific philosophy" is tending. From the contradiction that is said to be implied in the assertion of infinity, Mr. Shadworth Hodgson, in the first of his two articles on M. Renouvier's philosophy in MIND, Vol. vi., has pointed out a way of escape. "The realised infinite," Mr. Hodgson admits, is a contradiction; but the contradiction comes from taking "representation" as coextensive with phenomena, and assuming categories that are "forms of thought, not perception". "If we take the forms of perception, time and spatial extension, as our ultimates, then we shall find that infinity is involved in all perception. Every perceived thing, which is a portion of time or of space, has time or space beyond it. The perception that this happens always, whenever you have a perception, *this* is the infinity of time and space" (MIND, vi. 56). It is remarkable that this restoration of an "unexplored remainder," as the necessary background of all knowledge, is made from the point of view of what we may call the experi

ential as opposed to the rationalistic phenomenism. Although not made in the interests of a pantheistic view, it serves to rescue pantheism, as formulated by M. Renouvier, from the contradiction he finds in it. M. Renouvier, however, according to Mr. Hodgson, is right in everything but neglecting the background of knowledge, of which the necessary existence is revealed only in perception. The infinite, in Mr. Hodgson's sense, has no place in mathematical or any other science, but forms the inevitable background of all definite knowledge; practically, the infinite, when dealt with by thought, becomes what M. Renouvier wishes to substitute for it in all cases—a "possible indefinite". The section in which M. Renouvier discusses the antinomy of infinite and finite is, it may be added, one of the most valuable parts of his book. The real matter in dispute is disentangled from the complications of scientific hypotheses, and is shown to be a rational question, which, if it is to be solved at all, will not be solved by the mere "progress of science" independently of philosophic reflection. It is above all in making clear the true character of questions of philosophic criticism such as this, their fundamental position with regard to the sciences, their persistence throughout all stages of scientific development, and their insolubility except by criticism applied directly to consciousness, that the merit and distinction of M. Renouvier's method consist. Whether we are able to accept his solution of any particular philosophic problem or not, his statement of it may always be taken to be, as far as it goes, perfectly logical, and an indispensable basis for further study.

THOMAS WHITTAKER.

Le Sommeil et les Rêves, considérés principalement dans leur rapports avec les Théories de la Certitude et de la Mémoire. Par J. DELBŒUF, Professeur à l'Université de Liège: "Le Principe de la Fixation de la Force." Paris: F. Alcan, 1885. Pp. vii., 262.

The name of Delbœuf is less widely known in this country than it deserves to be. His works in logic and psychology mark him out as a writer of sound knowledge and of remarkable penetration. The present volume, briefly noticed on its appearance in MIND, x. 472, is, by reason both of its topic and its mode of handling this, very well fitted to give an impression of the writer's qualities as an observer, a thinker and an expositor.

No class of psychical phenomena has received less illumination from science than dreams. Some psychologists pass them by altogether, while others are apt to deal with them in a very hasty and superficial manner. The reason of this neglect is not far to seek. In the nature of the case the facts are exceedingly difficult to reach. Even if it is true that sleep is a continuous state of dreaming, it is no less true that comparatively few dreams persist after waking with a distinctness fitting them to be the

subject of careful scientific study. And in order to gain any knowledge of the phenomena exceptional pains have to be taken, which may well deter most men from making the attempt. Nor is this the only difficulty. As has been observed by ancient and modern writers, dreams are not common phenomena but confined to the individual, and this circumstance makes it extremely difficult to compare observations so as to arrive at one generally acceptable theory of their nature and causes. Of late, however, the subject has been taken up with real scientific seriousness, and we may perhaps look forward to a not distant time when, as the result of a more systematic study of accessible facts, the chaos of dreamland will be reduced to psychological order. Prof. Delbœuf's volume may safely be included among the valuable works of research which have recently helped to clear up the obscurities of the subject.

The volume opens with a critical sketch of some of the works on dreams—those of Spitta, Radestock, Stricker, Maudsley and others—which have appeared during the last few years. While recognising in these real contributions to our knowledge of the subject, the author finds that they do not offer an adequate theory of the phenomena. Thus, to take one of the most elaborate treatises, that of Radestock, he finds fault with its very definition of the dream, *viz.*, the continuation of the activity of the mind during sleep, and proposes as "infinitely preferable" that given by Aristotle, "the image produced by sense-impressions when one is in a state of sleep and in so far as one sleeps". To hear faintly the barking of a dog in sleep is not, says our author, to dream. He objects to all theories that would explain dreaming by a complete suppression of certain faculties or modes of mental activity, as self-consciousness, volition, the moral sense, &c. The writer's remarks on the doubling and even the trebling of personality in dreams, *à propos* of Radestock's theory of a suppression of self-consciousness, are peculiarly striking and suggestive. He finds in these phenomena merely a further development of the tendency of the waking mind to dramatise and give independent embodiment to the processes of thought.

After this critical review Prof. Delbœuf has a first section on the relation of the dream to the theory of certitude. He begins with a distinction between perception and what he calls "conception". The former is accompanied by a belief in an external reality, which, like all belief, is the result of habit. How the mind comes by such a habit of projecting sense-impressions Prof. Delbœuf does not explain beyond saying that the individual derives it from his ancestors. One is a little surprised to hear the author remarking that in its essential psychological characters the conception does not differ from the perception. "The distinction between the two rests upon an extrinsic circumstance, the presence or the absence of the object as far as perceived." But he cannot of course help seeing that, if there is no psychological difference

between the percept and the image, we could never have learnt to distinguish the two under ordinary conditions, and so he has to fall back on the crude distinction drawn by Hume and others, *viz.*, the superior vivacity of the percept. Assuming this to be an all-present and sufficient mark of the percept, he follows M. Taine, to whom however he does not refer, in regarding the illusion of the dream as due to the suppression of the more vivid mental states excited by external objects. We believe in the reality of our dream-images, not because they differ in absolute degree of vivacity from ordinary images, but because, owing to the exclusion of external impressions, they have gained enormously in relative force. I am not quite sure that I fully understand Prof. Delbœuf here. He can hardly mean, I fancy, that in the state of sleep images do not persist and master the attention with a force incomparably greater than that of waking images, even when, as in shutting the eyes in a quiet room, the effect of external impressions is very greatly reduced. The vividness and distinctness of detail with which one is often able to recall a dream immediately after waking, and when the fresh impression of the external world is particularly powerful, points, I think, unmistakably to the absolute vivacity of the dream-image. To say that the image can only attain to this degree of vivacity on the condition that external impressions are withdrawn is one thing; to say that it has only gained in relative vivacity is another. Prof. Delbœuf, in discussing the criterion of true perception, appears to make far too little of the coherent testimony of the different senses. Also, he writes hastily when he says that he only knows of one sense that is capable of correcting the others, *viz.*, touch; for it is a familiar fact that we rid ourselves of the momentary illusion due to a subjective skin-sensation by a glance of the eye. No doubt, as he says, the most important criterion is the consensus between the impressions of the individual and the testimony of others; but even this, as he virtually admits, is not uniformly conclusive, for, given a multitude of men subjected to the same disturbing conditions of panic, a common illusion becomes not only possible but probable. The result of this inquiry into the grounds of certitude is that there is no absolute criterion of truth. At the same time we are able to reach a reasonable degree of certainty, which speculative doubt, essentially insincere, is wholly unable to disturb, and of which indeed this so-called doubt is a sufficient distinctive sign.

After dealing with the logical side of the dream, Prof. Delbœuf discusses its psychological origin, and more particularly its relation to memory. He here sets out with a full account of a curious dream of his own in which, among other products of past experience, habits of life, &c., there occurred a botanical name which upon waking appeared to be quite unfamiliar to him. It was many years after that the puzzle was explained by his finding the word in a herbarium that some friends of his had brought

from Switzerland two years before the dream. Just as the consideration of the illusory character of the dream led our author to the wide philosophical question of the criterion of knowledge, so the psychological analysis of his dream conducts him to the general problem of memory. The reproduction with perfect clearness of a name, the origin of which was wholly forgotten, suggests that no impression is entirely lost. The fact of a uniform conservation of psychical impressions naturally connects itself with the law of conservation of energy, and the author does not shrink from discussing the nature and grounds of this far-reaching principle. He thinks that the doctrine of the transformation of energy is commonly taken to mean that the actual order of cosmic events is capable of being repeated, and he takes some pains to disprove this supposition. The whole progress of things is towards an equilibrium in which no further change is possible. Every transformation of a force leads to a partial fixation of what was once free. The transformable gives place to the intransformable. The conservation by memory of the traces of past impressions is a special illustration of these vast all-embracing laws. The assimilation by the brain of external impressions may be regarded as a fixation of external forces. Just as the crust of the earth indicates by the succession of its strata all the changes in the history of our planet, so, according to Prof. Delbœuf, the organism is constituted by layers which represent the past actions of itself and its ancestors. He resolves these into a central nucleus consisting of the *ensemble* of hereditary elements, instincts, dispositions, &c., and a region or "depôt of formation," the result of its assimilative faculty, and consisting of an uninterrupted series of layers representing its daily acquisitions. This idea of a central nucleus and enveloping layers is, the author tells us, merely a metaphor for helping us to conceive the fact that the individual is composed of what he receives from his ancestors and of what he himself acquires. He pursues his biological speculations at some length, discussing the "mysterious and fundamental general functions" of nutrition and of generation and of their relations one to another. There is much here that is suggestive, but much also that seems too figurative to be of any considerable scientific value. It must be confessed further that in some cases, as, for example, when he seeks to give a new definition to 'centre' and 'periphery,' his meaning is not as clear as it might be; the reader feels that the author, in his bold and brilliant career over the theory of the origin and end of all things, fails to do justice to many of the topics which he touches. He does, no doubt, apologise for his digressions by telling us he is writing not a treatise but an essay; but even an essay ought perhaps to have the unity which only a well-defined subject can impart, and what one rather misses in Prof. Delbœuf's volume is an attempt to define the limits of his subject. When at last he does recur, at the close of this second section of his work, to the proper psychological problem of

memory, much that he says on the nature of recognition and the laws of association, though not altogether new, is characterised by freshness and force of expression. Among other interesting points worthy of notice is the sharp distinction he draws between the association of simultaneous and of successive impressions, a distinction which he seems to base on his peculiar theory of the way in which the nervous organism functions. Some of his statements however seem open to criticism. For example, he contends that in recognising an object, say a portrait, "you do not recall in any manner the traits or the circumstances identically similar," and he goes on to ask, "How could you do so since you have them before your eyes?" To this it seems enough to say that unless the mind distinguishes a past like impression from the present, identification and therefore recognition becomes impossible.

Returning finally, in one more section, to the state of dreaming, the author urges afresh that, saving perception, all the faculties of the mind remain "intact in their essence" though employed about objects which are imaginary and mobile. In illustration of this he gives us a number of interesting facts drawn from his own dreams and from those of others. Yet he hardly succeeds in establishing the proposition he lays down. That in sleep the will is enfeebled with respect both to muscular action and to the free direction of attention is, one would say, a familiar fact to every dreamer. At the same time one may cordially approve of the endeavour to trace the effects of fixed habits of mind in sleep, and to claim for the dreaming intelligence a higher degree of rationality than is commonly accorded to it. In carrying out this endeavour our author proves himself a painstaking collector of facts and a skilful psychological analyst. In following him here in a domain which he has made thoroughly his own, the reader may be tempted to regret that he did not confine himself to a discussion of dreams themselves, some aspects of which are touched all too lightly, while others, and these by no means unimportant ones, are not handled at all.

JAMES SULLY.

Les Problèmes de l'Esthétique Contemporaine. Par M. GUYAU. Paris: F. Alcan. 1884. Pp. 257.

It is always pleasant to find oneself substantially in accord with what professes to regard itself as hostile criticism. M. Guyau's work is directed for the most part against the æsthetic views of the modern English school of physiological psychologists, represented in the concrete by the constantly recurring trio of names, "MM. Spencer, Grant Allen et James Sully". Speaking for the middle term at least of this unequally-yoked assemblage of evolutionary writers, I may candidly admit that M.

Guyau has very little indeed to say that does not meet more or less with his antagonist's cordial assent and acquiescence. His book consists in the main of criticisms directed against the view, originally propounded in the germ by Schiller, and put into more definite form by Mr. Herbert Spencer, which identifies the æsthetic sentiment with the exercise of the play-instinct on its passive side, in matters not immediately connected with life-serving function. In opposition to this idea, M. Guyau contends that the beautiful does not conflict with utility, desire, and the needs of the system. It has its roots, on the contrary, deep down in the very vitals of human life; it springs from the real, the essential, the normal, the necessary. There is, says our critic, a certain æsthetic value in large respiration, in free action, in flowing motion, in food, in perfume, in the reproductive instinct, in all that constitutes the core and essence of organic life itself. More than that: art bases its existence ultimately on these deepest and truest foundations of our nature; and because it does so, in spite of pessimistic ideas to the contrary, it will not decay before the face of modern science and the modern Americanised utilitarian sentiment. All this and much more like it is pleasantly urged in very clear and limpid French, with marked grace of expression and play of fancy, and with all its author's well-known charm of style and manner. But many parts of his book have literary rather than scientific or philosophical merit, and the writer often substitutes vague declamation or artistic prettinesses for the rigorous conciseness of psychological thought.

When M. Guyau goes deep enough to be scientific, it is not hard to see wherein lies the difference between himself and his English compeers. Our evolutionary and physiologically-minded thinkers, having to probe for the first time to the very base of the matter, have been busying themselves for the most part, and of necessity, with the beggarly elements of æsthetic feeling: they have had to deal rather with its simplest and earliest raw manifestations—its prime factors—than with the complex emotions roused in cultivated minds by highly-evolved works of art. Their French critic does but once more constructively fling in their faces the taunt long ago flung at Locke, of forgetting everything but children and savages. Only, he objects it with the utmost politeness and suavity of manner, rather by implication than by direct reference. On the whole, I am not inclined to quarrel with his contention that we have all left out of consideration many aspects of æsthetic sentiment. The truth is, all early work at any line of investigation must necessarily be very crude, vague and imperfect; it must require endless modification and guarding of statements; it must undergo perpetual revision, both to bring it into nearer harmony with ascertained fact, and to close the door against possible misapprehensions or distortions of meaning. Now for Mr. Spencer I cannot speak, further than to say that the treatment of Æsthetics in the *Principles of Psychology* is confined

to a single short, though highly suggestive, chapter, and that the incidental hints in the *Essays*, though more fully elaborated, belong to an early stage of Mr. Spencer's thinking, and deal with a few special points alone. Mr. Sully, too, I shall leave to defend or modify his æsthetic theories, as he likes, in person. But for my own early work—*Physiological Æsthetics*—which M. Guyau honours too greatly with much serious and generous criticism, I can frankly admit that it looks far too exclusively at the simpler sensuous elements of beauty only, lays too much stress on sight and hearing alone, and jumps too rapidly from these prime factors to the higher developments, without allowing nearly enough for the intermediate stages and the infinite interosculation of emotional, intellectual and associational disturbances. It is too rigid, too schematic and too youthful. Nobody can feel more intensely than I now do the immense complexity of the sense of beauty, and its profound dependence upon innumerable chords in all parts of our nutritive and sensitive nature. "Selon M. Spencer et son école," says M. Guyau, "l'idée du beau exclut: (1) ce qui est *nécessaire* à la vie; (2) ce qui est *utile* à la vie; (3) elle exclut même en général tout objet réel de désir et de possession pour se réduire au simple exercice, au simple jeu de notre activité." This, I think, hardly summarises aright the view in question. The necessary and the useful, we evolutionists believe, may all have their æsthetic side—do all possess an æsthetic side, in fact; but only in immediate contemplation of certain of their attributes other than their mere bare utility. When cognised as beautiful, they are not cognised as useful in the naked sense. M. Guyau himself admits that the poetry of a railway lies not so much in the permanent way, the rails and the sleepers, as in "the palpitating engines, snorting steam athwart the acres"; and I fancy at bottom the differences between himself and his English contemporaries are not quite as irreconcilable as he now imagines. Certainly when he says, "Considérer le sentiment esthétique indépendamment de l'instinct sexuel et de son évolution nous semble aussi superficiel que de considérer le sentiment moral à part des instincts sympathiques," he is uttering a truth with which, I believe, the English psychologists themselves are deeply penetrated. English æstheticians cannot be accused of neglecting the importance of sexual selection, nor of overlooking the *rôle* played by love in all poetry, and by ideal female beauty in all plastic and pictorial art. Only, the untrammelled treatment of that side of the subject is rendered far more difficult by circumstances in England than it is in France.

In short, the recognition of an intimate fundamental connexion between functional life at large and the idea of the beautiful, which M. Guyau believes to be his own special discovery, seems to me, on the contrary, an essential principle of the entire English evolutionary school.

The latter portion of M. Guyau's volume deals rather, in his

accustomed manner, with the practical outcome of recent æsthetic theories. In France, where the sterner and less poetical side of so-called "Materialism" and evolutionism has been too effusively and somewhat brutally dwelt upon, there seems to be a disposition on both sides to take it for granted that beauty and art have now played out their part in the world, and that utility and science—naked utility and harsh science—are to have things all their own way in the kingdoms of the future. Against this cruel and monstrous idea M. Guyau emphatically protests. Herein all English thinkers will probably agree with him. Fortunately for us, we see over here no necessary antagonism between science and poetry, between truth and beauty. On the contrary, some of us see even a close and necessary natural alliance. The sublimity of our modern cosmic conceptions must sooner or later affect our poetry and our art: imagination is none the less imagination because it is true rather than distorted. The last topic of M. Guyau's volume, "L'Avenir et les Lois du Vers," occupies a somewhat disproportionate space in his disquisition, as might naturally be expected from the author of *Vers d'un Philosophe;* it teems with apt illustrations and just criticism, but offers comparatively little of interest to a philosophical English reader. The pages swarm with the mysteries of French prosody; and though to those who (like the present critic) have been brought up in France, Victor Hugo and Charles Baudelaire are full of subtle music, yet to most Englishmen French poetry still clearly presents itself as a mere trackless jumble of utterly lawless and unrhythmical syllables.

GRANT ALLEN.

Erfahrung und Denken: Kritische Grundlegung der Erkenntnisstheorie. Von JOHANNES VOLKELT, Professor der Philosophie an der Universität zu Basel. Hamburg u. Leipzig: Voss, 1886. Pp. xvi., 556.

Prof. Volkelt's new work is at once a supplement to his previous treatment of the theory of knowledge, in reference to the Kantian philosophy (*Kant's Erkenntnisstheorie*, 1879, noticed in MIND, v. 145), and an important contribution to the study of problems fundamental in Logic and in Metaphysics. *Erkenntnisstheorie*, or theory of knowledge, is a term so much in vogue, and the distinctions supposed to be implied in it have been made to wear an aspect of so much significance, that an attempt at exhaustive treatment, even of its more general features, deserves cordial recognition and welcome. Any apology, such as Prof. Volkelt alludes to in his prefatory note, for over-elaborateness in statement, seems needless. The difficulties experienced are very largely dependent on the excessive ambiguity of the technical terms that must be employed, and a writer can hardly confer a greater benefit than by subjecting these to detailed analysis and making clear the

sense in which they are used by him. In laying the foundations of a theory of knowledge everything depends on the power of defining terms so as take account of the innumerable side-issues as well as main problems that have come to be connected with them. Here, as elsewhere in philosophy, the settlement of the significance of a term is the final result of prolonged analysis.

In the course of Prof. Volkelt's work, many questions of logical theory or of the philosophy of logic are opened up, and on all of them what the author has to say deserves and will repay study. But the work has a specific aim and one very definite problem, the various sides of which are in gradual succession opened up. It will probably convey the best idea of the question and of the solution the author has to offer, if in this notice as full an exposition as is possible in the limits be offered, following the order adopted in the book itself, but omitting what may be judged or what is allowed by the author to be of secondary importance.

The book falls into eight sections. The first, entitled "The Scientific Need for a Theory of Knowledge," formulates the question and gives certain historical notices that render its import more definite. The second, entitled, "Pure Experience as a Principle of Knowledge," and the third, "General Significance of Logical Necessity as a Principle of Knowledge" (or, as it might have been called, "Thought as Principle of Knowledge"), are relatively the most important, and contain in brief what is special to Prof. Volkelt's view of the whole question. Section iv., "On Knowledge as the Co-operation of Experience and Thought," states from another side what has been reached in the preceding sections. Sections v. and vi., "The Subjective Factors of Knowledge" and "The Notion (*Begriff*) in its Significance for Knowledge," are excellent contributions to general logic, if that term be allowed in its largest sense. Section vii., "Kinds and Sources of Uncertainty in Knowledge," is likewise logical in character, forming the needful introduction to methodology. The concluding section discusses the solution given in the light of various problems more or less connected with it.

The stress of the whole book lies evidently in the formulation of the problem, and accordingly it is to the first section that one turns with greatest interest. The distinction between the several sciences, special knowledges as one might call them, which for their part assume without further question that objective knowledge is somehow possible, and a theory of knowledge which can evidently start with no such assumption, is the introduction whereby Prof. Volkelt advances to the discussion of *Erkenntnisstheorie* as a science without previous assumptions. The need of such a science he regards as sufficiently made out by reason of the well-grounded doubt that may be entertained regarding the very possibility of knowledge. Such doubt arises from the incontestable consideration

" that all the acts claiming to constitute objective knowledge are inseparably united to the individual consciousness of the knower, that they have real existence primarily and immediately nowhere save in the consciousness of the individual, and that they are perfectly incapable of extending beyond the consciousness of the individual and of grasping or entering into the field of the real that lies beyond". The meaning of this passage is perhaps sufficiently clear, despite its strongly metaphorical expression, though one may be allowed to entertain a doubt as to the possibility of altogether freeing oneself from the direct suggestions of the metaphors themselves. Knowing, says Prof. Volkelt in effect, is a process forming part of my individual mental life. It is therefore subjective, and by itself alone cannot substantiate any claim to yield objectively valid results. Whatsoever be the result of a critical investigation into knowledge, that investigation must start from the acknowledgment of the subjective and therefere inherently dubious character of every act of knowing. The cognitive individual may represent to himself an objective real as known, may represent to himself comparisons of his thought with the real as a test of their truth, may represent to himself other cognitive consciousnesses thinking or knowing the same as he does, but in every case he must acknowledge that his *representing* is a process in his own mind, and contains not in itself, in its own nature as fact, the warrant of its objective validity. It is legitimate to maintain, as a self-evident, ultimate principle, the proposition that knowing as an act is a process of mind ; I am directly aware of the existence of such a process, and the assertion of its existence has the strength of self-evidence. But I am entitled to no more than the assertion of such existence as a fact. Even if these subjective processes be more than facts in the mental life, even if they indicate necessities that go beyond the sphere of individual consciousness, such surplusage of significance is primarily for us something subjective ; it is certainty on our parts, and we have to ask how comes it that subjective certainty is taken as indicating objectivity of knowledge ?

It is natural that, having so formulated the initial difficulty, Prof. Volkelt should find in Locke rather than in Kant the historical originator of *Erkenntnisstheorie*, and in fact, the statement of the question carries one inevitably to the precritical philosophies, to Cartesianism, *e.g.*, to which Prof. Volkelt's method of starting the inquiry has many interesting points of resemblance. Perhaps one might go so far as to maintain, though the extreme generality of these questions allows wide scope for varied interpretations, that the question as formulated by Prof. Volkelt is not a problem of the Kantian philosophy at all.

Since objectivity implies on the one hand reference to existence lying beyond the limits of individual consciousness, and on the other hand validity for all consciousness, it is evident that nothing within the scope of consciousness can constitute objective know-

ledge. Every fact there is subjective in nature and individual. Absolute scepticism would thus be the necessary conclusion if there were not somehow given a kind of knowledge which, making no pretension to be objective, has the more valuable mark of absolute self-evidence. If there be such a knowledge, then on the basis of it something may be done for the theory of objective cognition.

As was remarked, there is much resemblance in all this to the familiar Cartesian procedure; and the answer offered strikes one immediately as little more than a modern setting of the *cogito ergo sum*, a setting which may be thought to bring to the front and exaggerate all that is unsatisfactory and dubious in the famous maxim.

There is, Prof. Volkelt thinks, one knowledge possessed by us, in regard to which we enjoy absolute certainty, and are not exposed to the troublesome doubts roused by the notion of objective cognition. "The slightest introspection shows me that I possess a knowledge (*ein Wissen*) of the processes of my own consciousness." This knowledge is absolutely self-evident and indubitable; nay more, it carries with it the very principle of certainty. The fact of knowing my own mental states is in itself the evidence for the knowledge; no further evidence is needed or is possible.

It is to the credit of the book that, just at this point, which looks exquisitely simple and is really very complex, an attempt is made to explain in detail what is signified by the "knowledge" of one's own mental states. "In the first place there must be some processes in my consciousness; secondly, my attention must have been directed upon them; and thirdly, I must have been able to discriminate, fix and observe the processes which fall within the range of attention. Merely to have conscious processes is not identical with knowledge of them. . . . Nay, even the attentive treatment of contents of consciousness is not necessarily an absolutely certain knowledge; it is further needful that I should be able to note their differences and limits"; in brief, to *observe* them. Apparently too, we cannot allow ourselves to feel sure that we do know any mental state, until we are able to reproduce it with consciousness of its identity. Finally, Prof. Volkelt extends the range of subjective self-evidence, and includes within it not only the immediately observed facts of consciousness, but all the contents of memory.

I must admit that, so far as I can understand the drift of this portion of the work, I entirely differ from the view apparently involved. It appears to me doubtful, even after Prof. Volkelt's careful statements, what exactly is meant by this knowledge and its certainty, and still more doubtful its connexion with the general problem of the work. Knowledge of inward states is here a process with its own contents; the mental states as occurring hold to these contents the relation which the Cartesians described by the terms *esse formaliter*. I do not gather that Prof. Volkelt

identifies the "formal" and "objective" being of mental processes; rather he appears to say that the difference is without any consequences as regards the principle of subjective certainty. To me the difference appears full of significance. So far as "knowing" is concerned, that—and not the difference designated by Prof. Volkelt as "trans-subjective" and "intra-subjective"—seems the most important. In observation of the inner life, the contents of the thoughts whereby we determine the nature of the observed are neither in *fact* nor in *meaning* necessarily identical vith the observed. Nothing is gained, as regards accuracy of knowledge, by the *intra-subjective* character of both observed and observation. I should regret to misrepresent Prof. Volkelt's meaning, but unless I have altogether misunderstood what is so patiently worked out on pp. 56-58, I can only conclude that he is identifying consciousness in its vaguest sense with scientific knowledge of the facts of consciousness. If to know the processes of consciousness mean to be able to determine accurately their characteristics and differences, I should be inclined to say that we can hardly claim any such knowledge. What we do possess is painfully and laboriously attained, and wants every mark of immediacy.

I am in the same position of doubt as to understanding the certainty, the self-evidence, which is the special attribute of this kind of knowledge. Prof. Volkelt's words are: "I possess an absolutely self-evidencing knowledge of my own conscious processes". "This proposition is not certain for me as a conclusion drawn from a number of experiences, but it is a fact, certain for me in exactly the same self-evidencing fashion as the assertion I now feel hungry or warm. With any content of consciousness I am likewise aware of this (*werde Ich dessen inne*) that there is given an absolutely self-evidencing knowledge of what is taking place in my consciousness". Apparently then this proposition of which we are immediately certain accompanies consciousness, and is therefore distinguishable from it. If so, then, if the content of the proposition be the fact that there is absolutely self-evidencing knowledge of inner states, as I altogether doubt the fact, I must doubt the proposition also. I should willingly go further and maintain that nothing is gained so far as knowledge and its certainty are concerned by the distinction between trans- and intra-subjective. I can be, in and through the process of knowing, no more certain of what is *in my* consciousness, if we allow for the moment that any accurate meaning can be put on so metaphorical an expression, than of what is beyond my consciousness. That knowing is a process of mind, and that the known is in the one case likewise a fact of mind, seems to me to give no additional certainty to the resulting cognition. I should have thought that some reference to the difficulty here arising would have been noted when past facts of consciousness were included among the self-evidencing and certain.

Prof. Volkelt proceeds rapidly from this point to a consideration of pure Experience as principle of cognition. Pure, mere experience is simply such knowledge as the subject directly has of his own subjective processes. Anything else shows itself on the slightest analysis to contain trans-subjective reference or trans-subjective elements. States of mind known by the subject as his make up pure experience; pure experience consists wholly in the successive and co-existent particulars of the individual's consciousness. There fall within it no propositions of universal validity; it manifests to us a discontinuous and disconnected multiplicity, with no common feature other than the more or less vague feeling that each state belongs to my consciousness, and so to one and the same consciousness (p. 87). Not that an Ego is given as a fact of experience; neither Ego nor Non-ego is a state of consciousness. Hume's excellent account of experience represents as a whole most accurately the point of view of mere, pure experience.

Prof. Volkelt has some interesting remarks, in this connexion, on Positivism and subjective Idealism as partial exponents of the point of view discussed. He rightly insists that in both cases elements are introduced which are not legitimate implications of the principle itself.

The principle of pure experience, then, warrants no objective knowledge, and the survey of it convinces us that, if there be objective knowledge at all, that, so far as its certainty is concerned, must be for us in the form of beliefs. There cannot be in its regard the absolute self-evidencing character, for, *ex hypothesi*, that which it evidences is not itself, but something trans-subjective. The knowledge remains *within* consciousness, and as claiming to disclose the trans-subjective has a certain mystical character (p. 136-7). We cannot *a priori* determine whether there are principles of objective knowledge in our consciousness. Their existence is only disclosed in a survey of what is given in consciousness. Here again I call attention, in passing, to the interesting analogy with the Cartesian procedure.

Such survey discloses readily to us, as possessing marked peculiarities, these conjunctions of presentations and representations which are accompanied by the thought of Necessity. In them we appear to be contemplating the nature of the facts indicated, not the subjective mode of existence of the presentations themselves. In so far as the necessity of conjunction is rested on the nature of the facts and does not flow from any other motive, moral, æsthetic, or the like, it may be called logical. It is the necessity of thought, exhibited only where thought is operative, that is, in conjunctions, not in the isolated elements conjoined. Necessity of conjunction, however much more it may involve as consequence of the character assigned to the conjoined, yields readily on analysis the two all-important characteristics of objectivity—universality and reference to existence beyond the individual act of

conjoining. The trans-subjective is therefore involved in every judgment, for judgment is the comprehensive title for all such conjoinings : directly, in so far as the reference to existence is concerned ; indirectly, in so far as the universality implies a multiplicity of consciousnesses with common laws of conjoining. The principle of logical necessity, or of the necessity of thought disclosed by survey of the facts of consciousness, is then the general expression for what is implied in trans-subjective knowledge.

The sections (pp. 39-181) in which the general characteristics of Thought are discussed are to be cordially recommended ; they form an excellent contribution to the logic of the judgment, and contain much that would repay minuter discussion. Omitting them, I proceed to note how Prof. Volkelt deals with the principle of logical necessity from the point of view previously stated as regards the sphere of absolutely certain knowledge. So far as I understand his view, it may be expressed briefly thus : Whatever be the nature of the trans-subjective reference involved in thought, whatever explanation we may find or offer regarding its probability, the *certainty* which accompanies it has only subjective ground, rests only on the invincible belief that accompanies the activity of thinking. " Thought rests finally on an inner experience of an intuitive kind " (p. 183), and this "is experience with the essential addition that the experience at the same time makes me aware of its validity for what is not experienced " (p. 189), *i.e.*, for the trans-subjective. Thinking then does not so much immediately warrant the trans-subjective validity of its contents as insist that, if they have been correctly attained, they must have such validity. We proceed in thought, so to speak, with an ideal in view, the essential nature of which is presented by thought itself, but the rounded completeness of attainment is not necessarily involved. Moreover, thought is purely formal : it can neither create the trans-subjective to which it points, nor fashion for itself its own subjective ideal content. That an activity so conditioned should yet claim to disclose the trans-subjective is intelligible only if we assume, not empty identity between thought and the trans-subjective world, but a community in root and laws (201, cp. 502). Prof. Volkelt expressly declines, as not forming part of the epistemological problem, the inquiries into the metaphysical nature of this relation, or into the psychological fashion in which thought comes about in the inner life.

Logical necessity, then, is the truly fruitful principle of objective cognition, and Prof. Volkelt proceeds to discuss how experience, in the sense previously defined, and thought co-operate together in fashioning the contents of the objective knowledge we deem ourselves to possess. His answer, briefly put, is in substance a modification of the Kantian view, but expressed with more specific reference to difficulties that have been raised since Kant's time. Thought gives to the contents of experience their objective reference, adds to them factors not supplied by experi-

ence itself, but it has neither originating force nor corrective skill. Experience is needed in order to set going the activity of thought, to supply materials for its operations, and to furnish means of testing and examining the results of the exercise of thought. Yet it is to be noted, as an essential correction to the Kantian view, that thought has not as its result the mere fashioning of experience into order and form it does not itself possess, but points constantly to what is never matter of experience. For in thought we may well distinguish from one another the functions which express its formal nature and the categories or conceptions of trans-subjective content which its exercise involves. The latter are often, perhaps for the most part, unconscious elements in our thinking.

It is evident that, apart from details as to the processes involved in thinking, the general position of thought in reference to the trans-subjective implied in it, may be characterised by the term subjective, and Prof. Volkelt, adopting on the whole the view excellently stated by Lotze (*Logic*, 536), gives a striking exposition of the Notion as the mode in which there is summed up the results of thought respecting the nature of its object.

It only remains to note, in this brief and imperfect account of a work unusually full of matters open to discussion, that Prof. Volkelt finds no other source of objective knowledge deserving to be placed alongside of the principle of logical necessity. Moral necessity, which in Kant's system played so great a part, is indeed allowed by him to have a quasi-objective reference, but "in essence it remains subjective". It does not give us, like logical necessity, the knowledge of causal order and regular subordination to law; it extends in no way our conception of the real order of the trans-subjective world. In a similar fashion are rejected the principles, often appealed to in the history of thought, of intuitive perception and intuitive self-apprehension.

It has been possible to comment only on that portion of Prof. Volkelt's work in which the central difficulty of theory of knowledge as conceived by him is explicitly stated, and what has been suggested by no means fulfils the requirements of adequate criticism on what one would describe as the Cartesian position. The essential characteristic of that position is the abstract consideration of consciousness as having within its own narrow limits the only certain knowledge attainable, and the natural consequence of the position is exactly that "flight" to belief in the trans-subjective validity of knowledge of which Prof. Volkelt's work is for the most part an elaborate defence. I believe it to be a real error in philosophical method to make the initial steps in a theory of knowledge from the Cartesian position, and am of opinion that the whole advance achieved by Kant is lost if we return, in dealing with the epistemological problem, to the identification of knowing as a fact in the inner life of a subject with knowledge as the representation of a content known. It is only when we make

such an identification that we find ourselves driven to such crude imaginations of the process of knowing as seem to have weighed upon Prof. Volkelt. If knowing be conceived only as a fact or series of facts occurring, then truly we may puzzle ourselves by trying to depict it as involving "ein Hinausgreifen über das Bewusstsein, eine Berührung mit dem Trans-subjektiven," and, after deciding that its *contact* with the trans-subjective cannot be mechanical (!), venture to say that it must be "so to speak, dynamical," and finally wind up by declaring it altogether *mystical* (see pp. 136-7). In all this there seems to me deep-rooted confusion. I do not say that the difficulties alluded to are all of them unreal, but only that their character is altogether rendered inconceivable by the point of view from which they are described. I am unable to see the connexion, which to Prof. Volkelt appears evident, between the two main ideas of his work, the principle of experience as he calls it, and the principle of necessity of thought; or, at least, I fail to see how the two as here stated form parts of one consistent doctrine. But the whole question of the Cartesian method in the explanation of knowledge deserves and will repay a more elaborate discussion, to which I hope to return.

ROBERT ADAMSON.

VII.—NEW BOOKS.

[*These Notes (by various hands) do not exclude Critical Notices later on.*]

Our Temperaments: Their Study and their Teaching. A Popular Outline. By Alexander Stewart, F.R.C.S. Edin. With Illustrations. London: Crosby, Lockwood & Co., 1887. Pp. xxvi., 392.

The objects set before himself by the author of this work are first to bring into clear light the traditional medical doctrine of the four temperaments, and in the next place to make it more precise than it had become either in the hands of the Greek physicians or of those moderns (the Frenchman Richerand and the Spaniard Cortès) from whom other authors have chiefly drawn, when they have not drawn directly from the Greeks; the result of the whole being that it is possible to infer at once a large number of associated mental and physical qualities from mere observation of certain definite characters of colour and form. In both aims no small success has been attained. Whatever may be the positive value of the author's results—and he does not make any exaggerated claims for them—his researches and observations will henceforth hold an important place among contributions towards the scientific classification of human types. He himself points out the limitations of the doctrine. It applies only to civilised men; for no differences depending on the predominance of different systems of organs seem to be met with among savages. The distinctions that were drawn in ancient times, from Hippocrates onwards, cannot be accepted as true in detail except of the Greeks. Those of Richerand, the principal authority within the last half century, besides being often vague, are applicable only to French types. Again, the author's own distinctions "are taken from the people of our own country, and therefore may not apply to those of other countries, the physical characteristics and the influences that modify the mental ones being more or less different". The great defect of the ancient classification was, of course, the omission of the nervous temperament. In compensation, the bilious temperament was duplicated into the "choleric" and the "melancholic"; the last partly supplying the place of the "nervous temperament" of the moderns. The most important addition made by the author to the general description of the temperaments is the assignment to them of definite form-characteristics; but the advance he has made in precision cannot be measured by single additions, as will be seen when the tables giving his definitive results (pp. 77-80) are compared with the descriptions he quotes from the older authors. One column of each of these tables gives the "physical," another the "mental" characteristics of the four "pure temperaments". The last, in the author's view, do not form part of their determining characteristics; the temperament itself being a matter of direct physical observation, and thus known independently of all associated mental qualities. For this reason, indeed, he would restrict the word "temperament," in literature and conversation, to physical distinctions. Only the four physical temperaments and their compounds are known by definite marks; and these are recognisable, by the marks assigned, without risk of mistake. In the tables referred to, each temperament is distinguished by three characteristics of colour (as to 'hair,' 'eyes' and 'complexion') and four of form (as to 'face,' 'nose,' 'neck' and 'build'). The nervous temperament differs from the rest in all characteristics, both of colour and form; while the

sanguine, bilious and lymphatic, alike in all characteristics of form, differ from each other as well as from the nervous temperament in all characteristics of colour. The description of the "pure temperaments" is followed by descriptions of selected "compound," "balanced" and "semi-balanced" temperaments. Some suggestions are added, in the later chapters of part i., on modification of the temperaments by manner of life, and on their relations to climate and food, to disease and its inheritance, &c. In part ii. ("The Teaching of the Temperaments," pp. 267-392), hints are given for applying the knowledge of them to education, to choice of a profession, and to the promotion of health. The loose use of the word "temperament" is criticised in an acute and interesting way; and the biographical value of real "temperament portraiture" is illustrated both negatively and positively. As an aid to the classification of faces, a selection is given from *Lodyé's Historical Portraits;* the selected faces being arranged according to type. Lastly, the results are tabulated of "observation of the forms of a hundred faces".

The Functions of the Brain. By DAVID FERRIER, M.D., LL.D., F.R.S., &c. Second Edition, rewritten and enlarged. With numerous Illustrations. London: Smith, Elder & Co., 1886. Pp. xxiii., 498.

Dr. Ferrier's well-known work, reviewed in MIND (ii. 92) at some length on its first appearance in 1876, now re-appears after ten years in greatly altered and extended form. Plan and principles of treatment remain in general what they were, but, while the primary object still is to give a detailed account of the author's own celebrated investigations, the book can now much more than previously claim to present "a systematic exposition of the functions of the brain and central nervous system in accordance with . . . the best established facts of recent physiological and pathological research". Enlarged by more than half its former size, it has also in the parts reproduced been so carefully revised as to be practically a new book; the doubt only being suggested, by some of the patches worked-in from the first edition, whether the author would not have done better—it could not have given him more trouble—to "rewrite" absolutely *de novo.* The structural revolution is nowhere more marked than in c. i., where the cerebro-spinal system is now very exhaustively described in 50 pp., taking the place of 15 pp. of mere "sketch" before; c. ii. also now gives adequate account of the spinal cord, in its double function of conductor and centre, at a length of 40 pp., where 7 pp. on the single reflex function were formerly thought sufficient. Several of the following chapters, dealing with the main divisions of the system upwards, are recast and all are revised; but the next radical change is in (or from) the old c. ix., "The Hemispheres physiologically considered"; its two sections of "Sensory Centres" and "Motor Centres" being now set out as two chapters (ix., x.), at twice the previous length. More new work has, in the last ten years, been done upon the "sensory centres" than in any other department of cerebral research, and the result is particularly apparent in the elaborate account (35 instead of 7 pp.) that has now to be given of the "visual centre"—so much more complex in its connexions as well as wide-spreading in superficial area than was at first supposed. As to the "motor centres," while here and also in other parts of the new edition the author is more than ever forward to argue against the view of "muscular sense" that connects it (physiologically) with the outgoing current, he still does not appear sufficiently to consider what support (as hinted before in MIND and as has also been urged by Dr. Bastian) that view gets from his own conception of such centres—support that is not nullified by withdrawal of particular expressions or sentences from the

later chapter (now xii.) where he sets out his general psychological interpretation of cerebral processes. The chapter just mentioned gives some little expansion to his earlier suggestion connecting Attention with the frontal lobes, but does not otherwise advance towards determining the physiological conditions of the higher mental functions, and in general is not much altered from its previous form. On the other hand, the foregoing chapter (now xi.) on the "Basal Ganglia" is wholly recast; with which fact may be noted the suppression of the old chapter xii. that gave, with formidable nomenclature, a "diagrammatic summary" of his whole view of the relations, internal and external, of the different grades of centres. In that summary, with the diagram drawn to illustrate it, the most questionable feature was the unhesitating assumption of a direct connexion between the optic thalami and the corpora striata, as if these constituted between them one relatively distinct sensori-motor mechanism. No sufficient anatomical or physiological ground was adduced for the connexion in the first edition, and still less is any now supplied in the new chapter, which shows with great care and candour how little is yet really made out concerning these great ganglionic masses. It might be supposed then that the author has withdrawn his old summary chapter, if for no other reason, in order not to prejudge the question of their relations; but he surprises us by, after all, at the end of c. xi. (p. 422), putting it forward as at least "probable" that "they constitute together a sensori-motor mechanism, subservient to the manifestation of all those forms of activity which do not imply conscious discrimination or true volition". Here it would seem the doctrine of the first edition might with advantage have been left wholly aside. The remarks now made are intended merely to give the barest notion of the changes in a book of established importance. There will be opportunity later on to examine with the necessary care some of Dr. Ferrier's positions, which he has now spared no pains to render as strong as, upon new investigation and farther reflexion, he can make them. Nobody that set store by the first edition can afford henceforth not to have the second rather at hand for study and reference.

Types of Ethical Theory. By JAMES MARTINEAU, D.D., LL.D., late Principal of Manchester New College, London. Second Edition, revised. 2 Vols. ("Clarendon Press Series.") Oxford: Clarendon Press, 1886. Pp. xxxii., 512; viii., 596.

Dr. Martineau's work, of which the main thesis is subjected in the present number to a more special handling than it formerly received, here already re-appears, in two volumes of a reduced and very handy size. In the way of revision, "a few passages are modified or annotated in order to guard against misconceptions occasioned by their inexact form". Otherwise, the author contents himself, in a second preface (pp. xix.-xxx.), with defending his designation of Plato's theory as "unpsychological," and now extending it more expressly than he had done before to Aristotle's theory also, which has no place in the scheme of the work; with a short justification of his antithesis of "idio-" and "hetero-psychological"; with a promise that the question of free-will is to be discussed in the complementary work to follow on Religion; and with some farther remarks on the necessary implication of "personal relation" in the notion of "moral authority". In an Appendix (ii. 569-75) are given four letters that passed between the author and Mr. H. Spencer on the interpretation put, in the first edition, on the latter's conception of evolution.

Studies in Ancient History, comprising a Reprint of *Primitive Marriage*, &c. By the late JOHN FERGUSON MCLENNAN. A New Edition. London: Macmillan & Co., 1886. Pp. xxxi., 387.

Though these *Studies*, made up of the famous *Primitive Marriage* and five shorter essays on kindred topics, lie outside the strict province of MIND, they touch it very nearly and may be mentioned again as they were when first collected in 1876 (Vol. ii. 132). They now appear with a number of additional notes, supplied by the lamented author's brother, Mr. D. McLennan, at first hand or (in the case of the now considerably increased Appendix, pp. 165-91, to *Primitive Marriage*) on the basis of collections of supporting evidence made by the author himself. A second volume is promised "containing other writings of the author—writings for the most part hitherto unpublished, and prepared for a work which was left unfinished—from which it will be possible to gather, in a considerable measure at least, how far the author's views had grown or been developed, how far they had changed or been added to subsequently to the appearance of *Primitive Marriage*" (first in 1865).

The Introduction to Hegel's Philosophy of Fine Art. Translated from the German, with Notes and Prefatory Essay. By BERNARD BOSANQUET, M.A., late Fellow and Tutor of University College, Oxford. London: Kegan Paul, Trench & Co., 1886. Pp. xxxiii., 175.

This is a complete translation of the Introduction to Hegel's *Æsthetik*. Mr. Hastie's rendering, noticed in MIND, xi. 437, is, it seems, in the latter part, an analysis. The translator has "hoped that the present volume may be of interest to many who, without being students of philosophy, are intelligent lovers of art," and has therefore done his best "to *interpret* philosophical expressions, instead of merely furnishing their technical equivalents". The prefatory essay (pp. xiii.-xxxiii.) "On the True Conception of Another World" shows how "the 'things not seen' of Plato or of Hegel are not a double or a projection of the existing world"; the distinction of the ideal from the real world in the Hegelian philosophy at least being always a distinction "*within* the world which we know, and not *between* the world we know and another which we do not know". To illustrate this, M. Bosanquet explains the Hegelian notions of Infinity, of Freedom and of an immanent Deity.

The Life of Words as the Symbols of Ideas. By ARSÈNE DARMESTETER, Professor of the History of the French Language and of Old French Literature, at the Sorbonne. London: Kegan Paul, Trench & Co., 1886. Pp. 173.

These interesting Lectures—which were delivered in London to a limited audience and appear in translation before being published in French—although influenced throughout by the author's psychological aim, are for the most part concerned with (French) philology rather than with psychology directly. There is one chapter (pt. i., ch. 3, pp. 83-105) where the author deals suggestively with linguistic study as an instrument of psychological research, summing up his conclusion in the following sentence:—"Of the different natural manifestations wherein the character of a people reflects itself, their religion, literature, art and institutions, language is the most direct and most immediate, because it does not in the same degree as the others submit to the powerful and personal action of individual men of genius, and because, on the other hand, it is the very expression of the people's turn of mind, it is the very mould of their thought" (p. 105).

Life of Antonio Rosmini Serbati, Founder of the Institute of Charity. Edited by WILLIAM LOCKHART, Graduate of Oxford, Exeter Coll., Procurator of the Order in Rome, Rector of St. Ethelreda's, London. 2 Vols. London: Kegan Paul, Trench & Co., 1886. Pp. xxxiii., 360; xi., 352.

The first volume of this work appears to have been published by itself some time ago and, a second edition being called for, is now issued in smaller form along with the second volume. "The compiler of the first volume" (here unnamed, but originally, we believe, given as G. Stuart Mac-Walter) having meanwhile died, Father Lockhart assumes editorial responsibility for the whole work as now completed. It has come to hand too late to be more than simply noted here—with the single remark added that, while the 'Life,' drawn from the best sources, is evidently full of interest, it is followed in vol. ii., among other chapters of general characterisation, by five (pp. 216-303) giving account and estimate of Rosmini's philosophy.

Phantasms of the Living. By EDMUND GURNEY, M.A., late Fellow of Trinity College, Cambridge, FREDERIC W. H. MYERS, late Fellow of Trinity College, Cambridge, and FRANK PODMORE, M.A. 2 Vols. London: Rooms of the Society for Psychical Research, also Trübner & Co., 1886. Pp. lxxxiii., 573; xxvii., 733.

This long-expected work, the massive result of an inquiry conducted with astonishing vigour and pertinacity, has already become so well known in its main features through the daily and weekly press, that, for the present, it may suffice here to simply note its appearance. For all but an "Introduction" of xxxv. pp. and in vol. ii. a "Note on a suggested mode of Psychical Interaction" (40 pp.), due to Mr. Myers, Mr. Gurney is solely responsible, though he has been helped throughout in "the collection, examination and appraisal of evidence" by both of his associates, and has also obligations to acknowledge to a number of other persons. The volumes are mainly taken up with the record and discussion of "cases," but, besides the "Introduction," several chapters, especially c. iv. "General Criticism of the Evidence for Spontaneous Telepathy" (i. 114-85), are occupied with questions of general principle. These, it need hardly be said, are marked by no ordinary ability, while they display the fullest sense of the serious scientific issues involved in the inquiry.

Hume. By WILLIAM KNIGHT, LL.D., Professor of Moral Philosophy, University of St. Andrews. ("Philosophical Classics for English Readers.") Edinburgh and London: William Blackwood & Sons, 1886. Pp. x., 239.

The editor of the "Philosophical Classics" here makes his own contribution to the series, of which, as planned, only two volumes—*Bacon* and *Spinoza*—are still outstanding. He has given a much larger proportion of his volume (100 pp.) to the Life than Prof. Huxley did in like case, yet has managed, without going much beyond his predecessor's limits, to give fuller account also of the Philosophy, in respect of its origin, import and consequences. In the Life, which is very interestingly written, the author has been able to add several points of importance, from new sources, to the story as previously made out by the careful research of Hill Burton. The account of the Philosophy is rightly based on the *Treatise of Human Nature*, rather than the later works. The volume would have appeared earlier but that the author has been engaged in collecting materials for a larger work on the philosophy of Hume, to follow the present more popular sketch.

Leading and Important English Words: Explained and Exemplified. An Aid to Teaching. By WILLIAM L. DAVIDSON, M.A., Author of the *Logic of Definition.* London: Longmans, Green & Co., 1886. Pp. vi., 214.

This little work, intended for schools and sure to find an entrance where the master is intelligent enough, is a most useful yet simple piece of applied logic,—in the way of "synonymous discrimination". About a hundred and fifty important words are taken (in alphabetical order) and, in the light of certain clear principles of logical definition set out in a short Introduction (18 pp.), all the words of more or less closely related import are marked off in short and pithy phrase, followed by a copious collection of illustrative examples, chosen or made. The author in no way exaggerates the importance of such discipline for the youthful intellect.

S. Austin and his place in the History of Christian Thought. (The Hulsean Lectures, 1885.) By W. Cunningham, B.D., Chaplain and Birkbeck Lecturer, Trinity College, Cambridge. London: C. J. Clay & Sons, 1886. Pp. xiii., 283.

In these "Hulsean Lectures," partly theological and partly philosophical, the author aims above all at bringing out S. Augustine's essential difference from Calvin, his theological and philosophical moderation generally, and his special influence at all periods on the English Church. It is for this reason that he has used the older English form of the name; finding in it a difference of "theological associations". After an Introduction (pp. 1-18), the Lectures are divided as follows:—(i.) "Truth and the Possibility of attaining it"; (ii.) "The Origin of Evil and the Punishment of Sin" (The Manichæan Controversy); (iii.) "Human Freedom and the Divine Will" (The Pelagian Controversy); (iv.) "The Kingdom of God and the Means of Grace" (Philosophy of History; the Donatist Controversy). There is an Appendix (pp. 137-278) containing "brief discussions of several important points which could not be conveniently treated within the limits of the lectures". After "Excursus G" of the Appendix comes a reprint of a tract on "The Doctrine of S. Austin concerning the Christian Sacrifice," by "a divine of the University of Cambridge, who is identified by Lethbury with a non-juring clergyman named George Smith" (pp. 199-276). The Lectures are throughout copiously illustrated with passages from the father's works printed at length in the footnotes. In dealing with S. Augustine as a philosopher, the author first contends that he "states with extraordinary clearness the same proof of the possibility of indubitable certainty, which Descartes was to bring forth once again, when more than a thousand years had passed away" (p. 25), while his manner of applying it is superior even to Descartes' (pp. 39-41). He also "seems to have anticipated Kant in proclaiming the true Freedom of the Will" (p. 105). Again, as regards Philosophy of History "we may turn from the grandest modern account of the evolution of human progress—turn from Hegel himself—to S. Austin and feel that the historical system of the ancient father is more perfect and complete" (p. 115). The author further contends, in passages of the Lectures and also in "Excursus A," that S. Augustine (besides being a psychological observer) devoted much attention to the observation of nature. Towards the non-experimental physical science of his day "his whole attitude is not unlike that in which a modern might speak of the methods of fourth century physicists" (p. 138). Of the rest of the Appendix, "Excursus B" ("S. Austin's Influence in the Middle Ages") and "Excursus F" ("The Freedom of the Will") are the most expressly philosophical.

The Development of Taste and other Studies in Æsthetics. By W. Proudfoot Begg. Glasgow: James Maclehose & Sons, 1887. Pp. xx., 392.

The author's purpose in this book is not to deal with "the progress of

taste, in the widest sense of it, from the beginning of life on our globe to the present moment," but mainly "to note the widenening and growing intensity of a love for the beauty and grandeur of the outward material world as distinguished from man and his works"; and having done this, to consider "various other questions with relation to beauty which should be of interest to all, but especially to inquirers in philosophy and theology". In chapters i.-vi. he traces the development of the sense of beauty in external nature from its earliest manifestations; pointing out the evidences that the Greeks and Romans were not so much inferior to the moderns in love of nature and sense of the picturesque as is often supposed, but at the same time contending that the love of nature has been greatly developed through the influence of Christianity, and that the feeling of security given by modern civilisation has developed the sense of the picturesque. In cc. vii.-xiv. "the standard of taste," the association-theories of Alison and Jeffrey and of more modern writers, the "reality," the distinctive characters and the "universality" of beauty are discussed. Of the "association-theory" the writer says—"It has done well in arguing for a mental origin for beauty, and in insisting, by implication at least, that there is nothing beautiful apart from mind or spirit. For in that it is at one with all high idealistic speculations from Plato onwards, and with the old belief in which we have all been brought up that the universe is the work and creation of God" (p. 193-4). But beauty "is not a creature simply of association". "It is objective as well as subjective; real as well as ideal; a quality of things material as well as of things mental" (p. 248). Chapter xiv. is intended to lead to the conclusion that "all is supremely beautiful". There is an "apparent contradiction between such a conclusion and the view that many things are ugly"; but the contradiction is "only apparent". The ugly is "necessary in reality as in thought for the perception of the beautiful". This theory is "essentially optimistic"; postulating that, as Hegel says, "the real is the rational". "The Hegelian philosophy," however, "is wide enough to embrace the truth in any rational pessimistic theory that may be formed. In fact, it has embraced it from the first; for it is an 'optimism on the basis of pessimism,' and the two terms, like all other opposites, are held by it in reconciliation" (p. 355). In the last chapter (xv.) the author discusses the theory of colour, arriving at the conclusion that colour, like beauty, is not merely subjective, but is a real "quality in things around us".

Contributions to the Science of Education. By WILLIAM H. PAYNE, A.M., Professor of the Science and Art of Teaching in the University of Michigan, &c. London: Blackie & Son. Pp. 358.

The note of these *Contributions to the Science of Education* is insistence on the scientific character of the "art of teaching" that already exists, and on the importance of the history of educational theory for guidance in the present. The author holds with Prof. Bain, that if there is a science of mind there must be an "applied science of teaching" dependent on it as medicine is dependent on the sciences of life; and he contends that actually "there is a larger body of valid scientific truth within the reach of the teacher than within the reach of the physician". Teachers, then, ought to receive instruction in this body of knowledge; and instruction ought to be given first of all in the University; for the character of the higher education determines the character of all the rest. As with the teacher, so with the learner, knowing should precede doing. The attempt to make the education of the individual child a repetition of the education of the race is a mistaken one. Each generation has the accumulated experience of its predecessors; and it does best in giving the new generation the advantage of

traditional knowledge, without any attempt to make it acquire knowledge by a process of rediscovery, by "the method of Nature," as recommended by Mr. Spencer and by Rousseau. To "the creed of the 'New Education,'" *We learn to do by doing*, the author opposes "the apophthegm of Bias," *Know and then do.* "First the head and then the hand; finally the hand inspired and guided by the head:" this is the principle of all professional and technical education, of "all rational practice". Again, the educational procedure indicated by psychology is not synthesis throughout but decomposition of aggregates into elements first, and then afterwards, in dependence on this, synthesis of elements. The teaching of geography, accordingly, should begin with the globe, and not with the topography of the district in which the child lives. The most important problem for the teacher is to determine what Prof. Bain calls "education values". Knowledge may be valuable (1) for its practical use, which may be either "direct" or "indirect"; (2) for the mental power it gives, for its disciplinary effect, which may be either "specific" ("intensive") on a part of the mind, as with mathematics, or "tonic" ("extensive") on the whole mind, as with history and literature; (3) as "culture," that is, "for the mental satisfaction coming from the conscious possession of it". The book is especially worthy of attention for its acute criticisms of Mr. Spencer, and of those who take the more distinctively "modern" views of education. The author often returns, for example, to the question as to the relative value of "first hand" and "second hand" knowledge, "knowledge of things" and "knowledge of books"; and finds that in many cases, even when the former is available, the latter is of more value. Classical education, he believes, can be maintained, if it is no longer made to exclude other studies, and if literature is regarded as the end, grammar chiefly as the means.

The Re-organisation of Philosophy. An Address delivered before the Aristotelian Society, Nov. 8, 1886 (being the annual Presidential Address for the eighth Session of the Society). By SHADWORTH H. HODGSON, Hon. LL.D. Edin., Hon. Fellow of C. C. C. Oxford, President. London: Williams & Norgate, 1886. Pp. 60.

In the present Aristotelian Address the most prominent topics are the relation of *Erkenntnisstheorie* and of psychology to the four rubrics of philosophy distinguished in the last Address (see MIND, xi. 123). The conclusions arrived at depend on the relation that is found to exist between "agency" in science, physical and psychological, which belongs to the rubric of "Real Conditioning," and "the moment of reflective perception," which is the basis of the properly philosophical rubrics of "Distinction of Aspects" and "Analysis of Elements". The error in the *Erkenntnisstheorie* of the Germans has been to assume Subject and Object as known previous to philosophical reflection, and then to identify the Subject, assumed to be a real agency like those of science and ordinary life, with "the one moment of reflective perception" or of properly philosophical experience. This moment is "*one* moment" not because it is numerically one, but because there is "identity in kind of the moments of distinct consciousness"; and there is no reason to suppose an "identical Self" corresponding to it as its "real condition". From this it follows that for the psychologist as for the philosopher there can be no "Self other than the real organism which is the complex of real conditions of the consciousness"; Matter being the only "real agency" that science can recognise. What positions it is possible to take up as to the ultimate nature of matter and its origin, and as to the origin of consciousness, the author briefly indicates; reserving his own solution, so far as he conceives a solution to be possible, for another occasion, when the fourth rubric or Constructive Branch of

Philosophy shall be expressly treated of. A Note is added (pp. 55-60) recalling the distinction between "the two senses of Reality" explained in the Address for 1883: the first philosophical, in which "*Esse* is *Percipi*"; the second scientific, in which "Existence is the Order of Real Conditioning".

The Anatomy of Negation. By EDGAR SALTUS. London: Williams & Norgate, 1886. Pp. 226.

The author gives a sketch—in which, as he points out, "no attempt has been made to prove anything"—of "anti-theism from Kapila to Leconte de Lisle". "The anti-theistic tendencies of England and America have been treated by other writers; in the present volume, therefore, that branch of the subject is not discussed." The chapters of the book are (1) "The Revolt of the Orient"; (2) "The Negations of Antiquity"; (3) "The Convulsions of the Church"; (4) "The Dissent of the Seers" ("Spinoza—The Seven Sages of Potsdam—Holbach and his Guests"); (5) "The Protests of Yesterday"; (6) "A Poet's Verdict". The last is an essay on Leconte de Lisle as a representative of "theoretic pessimism".

Scientific Romances. No. V. "Casting Out the Self." By C. H. HINTON, B.A. London: Swan, Sonnenschein, Lowrey & Co., 1886. Pp. 205-29.

With this part (following on the others previously noted in MIND) the author completes his series of speculations on the knowledge of space, being here not less concerned with that subject in its purely theoretic aspect because he chooses a title of apparently ethical import. The title has a reason in the author's own psychological experience, as he seeks to show by way of conclusion to the whole inquiry.

The Mechanism of Nature. An Essay on the Fundamental Principles of Natural Philosophy. By ALFRED M. STAPLEY, late Berkeley Fellow of the Owens College, Manchester. Manchester: J. S. Cornish, 1886. Pp. 71.

Mr Stapley's tract deserves recognition as an earnest attempt to give explicit statement to the fundamental metaphysical conceptions involved in the scientific study of nature. It has, at the same time, the more ambitious aims of restating these conceptions in what seems to the author their true philosophical character, of showing the dependence on them of the general laws of nature as established by science, and indirectly of simplifying and exhibiting the close inter-relation of the most general physical axioms accepted in science. The work shows considerable acquaintance with philosophical and scientific speculation, and proves the author's genuine interest and no small ability in the abstract problems of thought. But its form renders it hard to appraise its value, and will in all probability cause it to receive less attention than may be its due. Science does not readily tolerate large and far-reaching metaphysical conceptions, the scope and grounds of which are equally ambiguous. It is almost impossible to say what is the extent and what the justification of the very general considerations with which the Essay starts. The positions are laid down in over-dogmatic fashion, and the language, though apparently precise, leaves the largest possibilities of misinterpretation open. At the critical points, moreover, it appears as though Mr Stapley rather darkened counsel. The topic of the essential tri-dimensionality of space (§§ 31-33), on which the writer has seemingly been much influenced by Lotze, is not handled in a way to overcome that writer's well-weighed scruples, and while we willingly leave to the judgment of scientific

experts the estimate of the objective worth to be assigned to the effort at deduction of the universal law of physical action, we must express the opinion, from the metaphysical side, that the reasoning seems to involve, as so many similar reasonings have done, the vice of subreption. It would be unjust, however, not to add that the treatment of the fundamental mechanical and thermo-dynamical laws has the merit of bringing into relief the close connexion of the radical ideas involved.

The Life of Philippus Theophrastus, Bombast of Hohenheim, known by the name of Paracelsus, and the Substance of his Teachings concerning Cosmology, Anthropology, Pneumatology, Magic and Sorcery, Medicine, Alchemy and Astrology, Philosophy and Theosophy, extracted and translated from his rare and extensive Works and from some unpublished Manuscripts. By FRANZ HARTMANN, M.D., Author of *Magic*, &c. London: George Redway, 1887. Pp. xiii., 220.

The author is an enthusiastic devotee of "the teachings of Eastern Adepts," and writes the present work because many things about which these "have to this day kept a well-grounded silence were revealed by Paracelsus three hundred years ago". It is evidently based upon an intimate knowledge of the great magician's writings, and casts useful light upon some movements in these days. Chap. i. contains a short life of Paracelsus (pp. 1-21), with a list of his works (pp. 22-6) as collected by "John Huser, doctor of medicine at Gronglogan, on the request of the Archbishop Prince Ernst of Cologne," and published at Cologne in 1589-90. Chap. ii. consists of Explanations of Terms used by Paracelsus, Including some other Terms frequently used by Writers on Occultism" (pp. 27-40). The remaining chapters set forth the teaching of Paracelsus under the heads enumerated in the title. An Appendix (pp. 199-213) consists of articles on various subjects from "Adepts" to "Zenexton," including one on "the Elixir of Life". Perhaps the chapters on "Magic and Sorcery" and on "Alchemy and Astrology" will best repay the curious reader. In the latter he will find directions for preparing "the Electrum Magicum" (p. 171), "homunculi" (p. 174), and "artificial gold" (p. 177). One of the notes (pp. 174-7) contains an account of the actual preparation "by a Joh. Ferd. Count of Kueffstein, in Tyrol, in the year 1775," with the assistance of "an Italian Mystic and Rosicrucian, Abbé Geloni," of "ten homunculi —or, as he calls them, 'prophesying spirits' (consisting of a king, a queen, a knight, a monk, a nun, an architect, a miner, a seraph, and finally of a blue and a red spirit)—preserved in strong bottles, such as are used to preserve fruit, and which were filled with water". Of this account the author remarks—"There can hardly be any doubt as to its veracity, because some historically well-known persons, such as Count Max Lamberg, Count Franz Josef v. Thun, and others, saw them, and they possessed undoubtedly visible and tangible bodies; and it seems that they were either elemental spirits, or, what appears to be more probable, homunculi" (p. 177).

L'Évolution de la Morale. Leçons professées pendant l'Hiver de 1885-6. Par CH. LETOURNEAU, Président de la Société d'Anthropologie, Professeur à l'École d'Anthropologie. Paris: Adrien Delahaye et Émile Lecrosnier, 1887. Pp. xx., 478.

The author, who writes from a point of view which may best be compared with that of Dr. Maudsley in England, aims at preparing the way, by a study of the actual evolution of morality, for the construction of a scientific ethics free from all "metaphysics," and founded consciously, as the first morality was unconsciously, on social self-preservation and utility.

In the course of his exposition he gives a clear and interesting account of the principal results of modern researches, historical and anthropological, on the origins of civilisation. Morality and religion, he finds, were at first independent, and in classical antiquity with its "laic morality" they always remained so to a great extent. The supernatural sanction, having become powerful, has often helped to enforce the precepts of a sound morality; but "from the moment when the conduct of men is regulated by the caprice of the gods, everything becomes possible"; and it is now of importance for social progress "to remind them that their kingdom is not of this world". "Metaphysical morality," of which in ancient times that of Plato and in modern times that of Kant may be taken as types, is merely "the shadow of religious morality". The definitive utilitarian morality sketched out by Epicurus and carried further by Bentham has been provided with its scientific basis by Mr. Herbert Spencer. Existing "moral instincts" are to be explained as the result of a process resembling the training of domestic animals by man: nothing being taken for granted except experiences of social good and evil, the power of "the nerve-cell" to retain impressions, and the fact of heredity. It is on the educating agencies, social and governmental, by which moral discipline is imposed, rather than on the fact of heredity, that the author lays stress in his actual exposition. There may be a struggle, he remarks, between "ancestral influence" and the action of "the social medium," but in the end the latter is all-powerful. "Education, the manner of life, fabricates morality." He holds it as proved "that there is a law of social evolution superior to the influences of race and environment, and that, to advance, human groups must pass through a successive series of social forms, analogous in all countries". This results from "the fundamental identity of physical and mental organisation in all the human race". The stages of moral evolution are, up to the present, (1) the "bestial" stage of the primitive man and of the lowest modern savages—inferior to the moral level of some of the higher animals—in which cannibalism is an ordinary fact; (2) the "savage" stage when cannibalism has been transmuted normally into slavery, although it may still survive as "religious" or "juridical" cannibalism; (3) the "barbarous" stage, marked by the formation of a more or less complete code of laws out of the old customary morality, society being still based on slavery; (4) the "mercantile" stage—reached only in quite modern times —when for slavery the payment of wages has been substituted. To the anticipated objection that this classification takes no account of the higher moral types, the author replies that moral elevation is in all ages very rare, though never entirely absent; it is the lower social facts that are characteristic. Yet progress, although slow, is real, and there is no reason to fear that the mercantile stage of morality will be the final stage. The origin of justice is found by the author in the primitive "reflex movement of defence," which first takes social form in the *lex talionis*. Retaliation, having been commuted into various compensations, is at length taken out of the hands of private individuals altogether, and the chiefs of tribes become the justiciaries. It is then that the disinterested notion of "ideal justice" begins to be formed. All societies have passed through a communistic stage, such as that which fixed itself in the ancient Peruvian monarchy. It was probably in this stage that the "altruistic instincts" were formed which have continued to resist "the egoistic influences of private property," manifest above all in mercantile societies.

Victor Cousin et son Œuvre. Par PAUL JANET de l'Institut. Paris: Calmann-Lévy, 1885. Pp. vii., 485.

The time having at length arrived when it appeared possible to set forth

with impartiality the whole of the work accomplished by Victor Cousin, the author has supplied what remained wanting for the full recognition of its importance, *viz.*, "a complete and detailed monograph founded on dates and texts". While admitting that Cousin's action in stimulating others was more important than any contributions of his own to philosophy, M. Janet still contends that, besides being a diffuser of foreign ideas in France, he was a real philosopher himself, though not pre-eminently a philosopher. That his originality has of late not found recognition, or has even been altogether denied, is, he admits, in great part Cousin's own fault. He was constantly modifying his works in a literary spirit, and destroying their characteristic features, and in his later years he was under the influence of a religious reaction. This explains the concessions with which he is reproached to common sense on the one hand and on the other to religious orthodoxy. What struck his original hearers, however, was his speculative audacity and his selection of the most abstruse problems in preference to those with more practical bearings. This impression is confirmed by the study the author has made of the earlier editions of his works and of the original records of his courses of lectures. Cousin's later error, M. Janet points out, has not only injured his own reputation but also that of his school; and to restore to spiritualism its place as a philosophy among other philosophies, to remove from it the accusation of being a mere *ancilla theologiæ*, has been the ungrateful task to which his disciples were long condemned (pp. 396-7). Another reproach against Cousin is the reactionary and stereotyped character of the scheme of philosophical education founded by him. This, the author contends, rests on a complete misapprehension. Cousin's reactionary period comes after the close of his official life; and his "official" scheme was neither reactionary nor a stereotyped expression of his own philosophical doctrines. He really did for philosophical instruction in France what Descartes did for philosophy itself,—separated and enfranchised it from theology and substituted a modern philosophy for scholasticism. The misapprehension of the real character of his administrative activity comes from failure to appreciate the historical circumstances. On many points the opposing parties—the advocates of laic and of theological education—have changed sides since Cousin's day. The historical view enables us to see also the importance of Cousin in philosophy itself. Ideas that have since become common property were then new. To Cousin's generally recognised merits as "the creator and organiser in France of history of philosophy" must be added the conception and putting into circulation of far-reaching ideas, such as that of treating the ontological problems of German schools of philosophy by the psychological method. After describing all the various sides of Cousin's activity, the author is able to give a most effective summary both of his contributions to thought and of the results of his literary and philosophical influence in France (pp. 451-4); and this while recognising as clearly as anyone the "grave defects" of his best thinking, its "want of coherence and want of precision," and above all the predominance in him of the oratorical over the philosophical spirit. In an appendix (pp. 455-485) an article is reproduced that appeared in the *Revue des Deux Mondes* on the 1st of February, 1867, a few days after the death of Cousin, containing some personal details that did not admit of incorporation in the systematic study.

Histoire de la Science Politique dans ses Rapports avec laM orale. Par PAUL JANET, Membre de l'Institut, Professeur à la Faculté des Lettres de Paris. 3me Edition, revue, remaniée et considerablement augmentée. 2 Tomes. Paris: F. Alcan, 1887. Pp. ci., 608; 779.

This work still stands so much alone as a serious attempt to cover the

whole historical field of political science (in relation with morals) that, upon issue of this present revised and greatly enlarged edition long after the second has been exhausted, some note may be taken of the progressive transformations it has undergone from the beginning. Commenced in 1848 and "crowned" in 1853 as an essay upon a subject set by the Academy of Moral and Political Sciences—"to compare the moral and political philosophy of Plato and Aristotle with that of the most distinguished modern publicists," it was, before publication in 1859 (when it was again "crowned" —this time by the French Academy), re-cast into the form of a *History of Moral and Political Philosophy*. In this form it had such acceptance that a second edition became necessary; but now the author saw the hopelessness of giving an adequate account of the historical development of ethics and of politics concurrently, and, concentrating himself upon the history of politics, held by his earlier idea only so far as never to leave out of view the question of relation to ethics when this was prominent with any political theorist. The book thus obtained its final title, and under the new guise appeared in 1872. The present edition differs from the previous one only by revision and enlargement, but the revision has been careful and minute, especially in the matter of bibliography, and the enlargement is very considerable. On the point of bibliography—always understood within the period, down to 1789, that he professes to cover—the author believes "that there does not remain a political name or writing of any importance not mentioned either in text or notes," and certainly the Bibliographical Index (ii. 745-63), bringing together all the references scattered throughout the volumes and adding others, gives evidence of the most wide-reaching labour, and should prove proportionately useful for purposes of reference. (M. L. Picavet has helped the author towards this comprehensive Index.) The enlargement is chiefly by the addition of chapters on the Encyclopædists, on moral and political philosophy in Italy and Scotland, on the American publicists,—making the *History* more adequate and complete down to its appointed term (the French Revolution); but there is also now given, in a concluding chapter (pp. 727-43), a sketch of the later political theorising in France, with some notes on English and German publicists of the present century, besides a very interesting Introduction (pp. v.-lxxi.), in which M. Janet discusses the relations of *Droit* and Politics, as in an Introduction to the second edition he discussed the relation of Morals and Politics. The new Introduction carefully investigates the import of the American and French declarations of "Rights of Man," and seeks, from the philosophical and even the historical point of view, to justify such formulation against the attacks of contemporary French thinkers of the positive and historical school (like MM. Taine and Boutmy). The Conclusion is intended only as a first and most general sketch, which the author hopes he may, still at his age, eventually develop into a third volume of the work. If he does so, he should add at least the names of Austin and Sir Henry Maine to those that he now notes as of importance on this side the Channel.

L'Irréligion de l'Avenir. Étude de Sociologie. Par M. Guyau. Paris: F. Alcan, 1887. Pp. xxviii., 479.

Instead of "the religion of the future" M. Guyau prefers to speak of "the irreligion of the future," because, although he might justifiably have used the first expression, he wishes to avoid all that kind of "symbolism" by which, as he thinks, an appearance is sometimes given of preserving what is in reality overturned. Another reason for the choice is that the "higher stage of religion," which in the future is to supersede religious dogmas and rites, is conceived as continuous not with present religion

but with present science and philosophy and independent morality. The sub-title indicates that the author regards religion as in its origin a "sociological" theory of the universe, and expects "the irreligion of the future" to assume finally just such a "sociological" form. In part i. ("Genesis of Religions in Primitive Societies," pp. 1-102) he contends, against Prof. Max Müller, that "the sense of the infinite" and other emotions of the kind, instead of explaining the origin of religions, are signs of their decomposition; and, against Mr. Spencer, that men did not at first distinguish between things animate and inanimate, but before any idea of spirit had been formed were able to "anthropomorphise" nature. For primitive peoples "nature is a society". Everything in which an interest is felt—that is, everything that can be useful or dangerous—is thought of as having a will. After the stage of "concrete naturism" in which the universe is "a society of living bodies," comes "dualist animism"; last of all comes the doctrine of a "metaphysical unity". The subject of part ii. ("Dissolution of Religions in actual Societies," pp. 103-298) offers occasion for comparison of the practical influence of Catholicism, Protestantism and Free Thought. Especially in this part there is much incidental discussion of social questions of the day. Part iii. ("The Irreligion of the Future," pp. 299-479) contains first a sketch of an ideal society in which "free association of intelligences, wills and sensibilities" has taken the place of religious rites, while "individual metaphysical hypotheses," perhaps approaching one another closely in essence, yet each having its own personal shade, have superseded the dogmas of Churches. In the later chapters the author goes through the series of possible metaphysical hypotheses detached from religion; discussing in succession "Theism," "Optimistic and Pessimistic Pantheism," and "Idealistic, Materialistic and Monistic Naturalism". His personal preference is for a form of Monism in which "life is the synthesis of matter and spirit"—a synthesis which, he thinks, is made by science itself. "Life is fecundity," at first unconscious, afterwards consciously manifesting itself in "intellectual and moral fecundity". This theory, applied to ethics in the author's last work, here forms the basis of speculations on a possible "definitive result of evolution". By a more and more complete "social interpenetration," an "intercosmical consciousness" may at length be attained. Beings in whom the law of the universe has become perfectly conscious of itself will be able henceforth to hold in check the process of dissolution. "Immortality would be a final acquisition made by the species for the benefit of all its members."

Le Magnétisme Animale. Par Alfred Binet et Ch. Féré, Médecin-adjoint à la Salpêtrière. Avec Figures dans le Texte. Paris: F. Alcan, 1887. Pp. 284.

This book (say the authors) "has been written in the atmosphere of the Salpêtrière," and it is well fitted to give readers the exact knowledge that is wanted of the remarkable experiments on human beings that have now for so long been conducted at that hospital under the auspices of M. Charcot. Hypnotism (for which the authors in their title somehow prefer to retain the older question-begging name) is truly the subject of the hour with psychological inquirers, and will soon be brought forward again at length in these pages, in respect of some of its latest and strangest developments. (Note also, already in this No., the observations at p. 154 below.) Before giving, from p. 62 of the present work, their clear and straightforward account of the phenomena they have witnessed in "subjects" of the three hypnotic states distinguished by M. Charcot as "Lethargy," "Catalepsy," "Somnambulism," and putting such psychological interpretation upon the phenomena as with trained ability they can, the authors give a

history of "Animal Magnetism," which may be taken as pretty complete for France, while it takes account also of the work at least of Braid in England. For the French Academy of Medicine, in particular, the subject, alternately spurned and recognised over and over again, has been a sore trial. To all appearance, it has at last been recognised on the footing of one with which science must henceforth steadily and progressively reckon.

Les Conditions physiques de la Conscience. Par ALEXANDRE HERZEN, Professeur à l'Académie de Lausanne. Genève: H. Stapelmohr, 1886. Pp. 55.

This is a new statement by Prof. Herzen of the grounds and results of his formulation of the law of the physical conditions of consciousness, briefly described in MIND, iv. 268-70. An Appendix (pp. 39-55) is added in which the author seeks to determine the elements of the feeling of personality. Especially worthy of notice as a piece of original psychological observation is his description of the phenomena of recovery from syncope (pp. 20-24), by which he obtains support for his theory of the degrees and kinds of consciousness in the spinal cord, the sensori-motor centres and the cortical centres of the cerebral hemispheres respectively. The use he makes of his observations may be compared with Mr. Spencer's use of similar observations on consciousness under chloroform (see *Psychology* i. and MIND, iii. 555). The consciousness that accompanies the functioning of the spinal cord and of the lower centres is, he concludes, at its maximum in the lower vertebrates, at its minimum in man; being more and more suppressed by the development of the higher centres. The "physical law of consciousness" itself, however (for which see MIND, iv. 269), is the same for all parts of the nervous system. In the higher centres also consciousness is perpetually shifting its ground as organisms evolve. What was at first a conscious process becomes with repetition, as so many writers have shown, "automatic". This does not mean, however, that the total amount of consciousness becomes less. So long as the plasticity of a race or an individual remains, the more perfect organisation of any set of processes serves as the basis for a more and more complex consciousness of higher processes. The whole study deserves attention as certainly one of the best attempts yet made at a synthesis of results in the special subject-matter.

Leçons de Philosophie. Par ELIE RABIER, Professeur de Philosophie au Lycée Charlemagne, Membre du Conseil Supérieur de l'Instruction Publique. II. *Logique.* Paris: Hachette et Cie., 1886. Pp. 384.

M. Rabier's *Logique* presents the same characteristics as lent a special interest to his *Psychologie*, noticed in MIND, x. 305. The *Psychologie* was not only a remarkably well arranged and clearly expounded treatise on its subject, but showed the traditional spiritualism of the French school ready and eager to take advantage of all the newer lights—in particular anxious to appreciate and as far as possible incorporate the results of recent English investigation. How strongly moulded the *Logique* also has been by the like influences appears in nothing more clearly than in the prominence given to "Applied" over "Formal" Logic, after the distinction is made in terms that would seem perfectly familiar to any English student. "Applied Logic" (or, as in opposition to "Formal" it might better have been designated, "Material") occupies almost three-fourths of the whole work, and does not omit any of the more important usual topics, while also including others, not less important, that have not yet received sufficient attention in the English books. Chap. xvi., "General Method: Analysis

and Synthesis in the different kinds of science" (pp. 293-316), especially deserves mention from this point of view; but the whole second division of the work (pp. 93-382) could not be read by any student without great profit. The "Formal Logic," carried out on conceptualistic lines, has its own merits, but on the whole comes considerably short of what in England would now be regarded as an adequate treatment of the subject. The discussion of Mill's theory of Syllogism is, however, noteworthy. It is now indicated that the remaining topics included by the author under "Philosophy" (see former notice in MIND) will be treated in one volume still to come of *Morals and Metaphysic*.

Notizia degli Scritti e del Pensiere filosofico di PIETRO CERETTI accompagnata da un Cenno autobiografico del medesimo intitolato *La Mia Celebrità*. Per PASQUALE D' ERCOLE, Prof. ord. di Filosofia nell' Università di Torino. Torino: Unione Tipografico-editrice, 1886. Pp. ccccx., 189.

Two volumes of the posthumous works of Ceretti were noticed in MIND, Vol. x. 620. In the present volume an autobiographical piece (pp. 1-119), together with some fragments in prose and verse, is edited, with notes, by Prof. Pasquale d'Ercole, who has also provided it with an extensive introduction (pp. xv.-ccccx.). Having carefully studied his writings (published and unpublished), Prof. d'Ercole, in this introduction, besides giving some biographical details, expounds systematically Ceretti's philosophical and other ideas. Copious extracts are given both in the text and in footnotes, from an early Hegelian work in Latin, entitled *Pasaelogices Specimen*, one of the few writings of Ceretti that were published in his lifetime. Prof. d'Ercole distinguishes two phases of Ceretti's thought; the first purely Hegelian, the second marked by a departure from pure Hegelianism. Of the first, the distinctive formula is that "the Absolute is Spirit," of the second that "the Absolute is Consciousness".

Geschichte der Ethik. Erste Abtheilung: *Die Ethik der Griechen und Römer*. Von THEOBALD ZIEGLER, Professor am Gymnasium in Baden-Baden. Bonn: Emil Strauss, 1882. Pp. xiii., 342.

Geschichte der christlichen Ethik. Von Dr. THEOBALD ZIEGLER, ord. Professor der Philosophie in Strassburg. Strassburg: Karl J. Trübner, 1886. Pp. xvi., 593.

These two volumes, of which the second has just appeared, are noticed together, not because they form parts of a single book,—for the change of publisher goes along with a difference both of external form and mode of treatment, and, as the author tells us, the two volumes do not necessarily appeal to the same readers,—but because they are parts of the working out of a single plan laid down five years since in the preface to the first volume. The author's ultimate purpose is to construct an ethical system adequate to modern needs; but first, in view of the dependence of all possible systems on the past, he has set himself to make a complete survey of the forms of ethical thought that have succeeded one another in the philosophical development of Europe. Direct consideration of Oriental philosophies is thus excluded, their influence being only incidental; and the whole history of ethics falls into three periods—the Græco-Roman period, the (exclusively) Christian period, and the modern period since the rise of Humanism. The distribution of the subject-matter of the new volume, on Christian ethics, will be best understood from the titles of the chapters, which are as follows:—(1) Judaism; (2) The Ethics of the New Testament; (3) The Ethics of the old Catholic Church; (4) Monachism: Augustine and Pelagianism; (5) The Ethical Doctrine of Scholasticism; (6) The Germans and the Church; (7) Mediæval Mysticism; (8) Humanism and

the Reformation; (9) The Ethics of the Reformers; (10) The Ethics of the Protestant Church; (11) From the Anabaptists to Pietism; (12) Jesuitism. The author expresses the hope that the greater attention given to applied ethics and to the reciprocal influence of ethical philosophy and actual morality may make the volume a supplement to Jodl's exposition, confined more to principles, in the *Geschichte der Ethik in der neuern Philosophie.* His general view, only briefly indicated,—for the purpose of this volume, as of the first, is not criticism but history,—is that recent historians have done something more than justice to the Middle Ages and something less than justice to Humanism. The second volume, as has been said, is not uniform with the first on the ethics of the Greeks and Romans, which has, for example, very copious and detailed notes and references (pp. 249-342), while in the new volume the notes are comparatively few; but the difference of treatment was from the outset part of the author's plan. The view of the history of ethics in the light of general history is a feature of both volumes; but the first is much more exclusively concerned with philosophical ethics than the second. The author is here, as he acknowledges, in closer contact with the sources. One of the merits of his work is the combination of full and accurate detail with great clearness of outline and directness of movement. The exposition of general philosophical tenets is brief but sufficient for the understanding of the ethical systems. The author follows Zeller (to whom the book is dedicated), but with independence of judgment. Points on which he especially insists are (1) that the ancient ethical systems are all "realistic," in the sense that they were all founded on some natural impulse of man, and never, even when most apparently ascetic, became like Christian ethics the assertion of an external rule in contradiction to human nature as a whole; and (2) that "measure and harmony," being characteristic of the Greek national conception of virtue, find expression in every Greek ethical system. With "realism" or "naturalism" goes "intellectualism,"—the placing of insight first among the virtues. From the typical Greek conception of καλοκἀγαθία it resulted that "the æsthetic moment" was an element in all the ancient ethical systems, so far as they were not modified on Roman soil, including even Neo-Platonism. That the modern world has lost this conception is partly due to an advance in insight, and marks the gain of a new distinction; partly it is a real loss—the loss of the whole "æsthetic moment" from ethics. Again, so long as Greek freedom remained, there was an intimate union of ethics with politics; and (as is indicated in the second volume) what the moderns have to learn more and more from the history of Greek ethics is the necessity of "the political moment"—the reference to the State—in any complete morality.

Entwicklung und Glückseligkeit. Ethische Essays von B. Carneri. Stuttgart: E. Schweizerbart (E. Koch), 1886. Pp. 469.

Although these essays and reviews are not exclusively ethical in subject, the title is justified not only by the large space devoted to the discussion of questions of ethical philosophy, but also by the relation in which the discussion of theoretical questions stands to the author's ethical doctrine. The term "ethics" itself he uses in an extended meaning, comprising under it not only "morals in the narrower sense" but every application that can be made of "the philosophical sciences" to the guidance and perfecting of human life. He finds himself in general agreement with Mr. Leslie Stephen, whose *Science of Ethics,* as well as *English Thought in the 18th Century,* he enthusiastically reviews (xxiii., xxiv.). His own doctrine, however, is not without distinctive features; the most important divergence from Mr. Stephen being in the view taken of the respective functions of

"society" and "the state" in the origin of morality. In an essay on "The State and Morality" (xv.), and elsewhere, the author contends that morality was formed under the direct action of the state rather than of "society". It is the state, he holds, that makes society possible, not society the state (p. 232). This essay, it may be mentioned in passing, is one of the best and most characteristic in the volume, the author's view of "the free state" having special interest. "Morality in the wider sense" (Sittlichkeit), as distinguished from "morals" (Moral), or obedience to traditional moral precepts, is made to include that care for personal well-being on which Mr. Stephen lays stress while excluding it from morality properly so called (xxiii.). Æsthetics also, though outside morality in the narrower sense, is to be included under "ethics," or the science of "Sittlichkeit" (xxi., "Zum Problem des Schönen"). The good and the beautiful both depend on the true. In the order of development, accordingly, intelligence precedes art and morals, the growth of intelligence being itself made possible by the protection of the state. The ideal of "Sittlichkeit" is thus not merely the moral but the complete man. The "ethical" aim is happiness, which coincides with "development," individual and social. The "moral" aim is social "health" or "well-being". This distinction the author finds to be recognised by Mr. Stephen, and only not made perfectly explicit because of the want of an English word for "morality in the wider sense". Of the essays not directly occupied with ethics or æsthetics (i.-xiii., besides two or three of the later ones) the most are devoted to the exposition of the "real-idealistic monism" which the author makes the basis of his practical philosophy. This monism he attaches to the doctrine of the Eleatics, "the ancient representatives of idealism" (vi.), as well as to the "Materialism and Sensualism of the 18th century" (iv., v.). While admitting the imperfections of these latter doctrines from the point of view of the theory of knowledge, he at the same time claims for them that they only need correction in the light of ideas that have since been better understood to give a true view of the origin and nature of human consciousness. As the moral sense did not exist in the beginning but is the final flower of the civilised state, so life and consciousness do not belong to "elements" but arise out of their combination,—a combination of which the organism is the material expression.

Ethik. Eine Untersuchung der Thatsachen u. Gesetze des sittlichen Lebens. Von WILHELM WUNDT. Stuttgart: F. Enke, 1886. Pp. xi., 577.

In like form with his *Logik*, Prof. Wundt here presents a systematic treatise on Ethics. Though he has won his chief fame upon a field from which Ethics seems somewhat remote, those who remember his early work *Vorlesungen über die Menschen- u. Thierseele* will know that his interest on the subject now treated reaches back to quite the beginning of his philosophical career. For the present, till Critical Notice follows, it may suffice to mention that, while recognising the indefeasible relation of Ethics to pure Psychology, he relies upon Folk-psychology or Anthropology as affording the effective basis of ethical inquiry—this, as against the notion that the true basis is to be found in Metaphysics, which must rather itself be founded upon ethical considerations; on the other hand, when he comes to the philosophical determination of the principles of Morality, he finds himself in what some may think—but which, he contends, is not really—surprising agreement with certain main positions of the Kantian school of speculative idealism. After a short Introduction, the work falls into four parts: (1) The Facts of the Moral Life, (2) Systems of Moral Philosophy, (3) The Principles of Morality, (4) The Departments of Moral Life.

Die Ethik als Wissenschaft, mit besonderer Berücksichtigung der neueren englischen Ethik. Eine philosophische Abhandlung von Dr. Hans Voltz. Strassburg: Karl J. Trübner, 1886. Pp. 55.

The author aims at developing an ethics of "pure Positivism". His discussion of the ethical question proceeds on the basis furnished by "the German Positivism" (as represented by E. Laas and Prof. v. Giżycki) on the one side, and Utilitarianism (as represented by Prof. Sidgwick) on the other; the ethics of Evolution (as represented by Mr. Spencer, Mr. Stephen and W. H. Rolph) being taken up incidentally. To his discussion of the question, "What may we expect from the scientific treatment of ethics?" ("Ethischer Theil," pp. 19-55), he prefixes a consideration of the preliminary question, "What may we expect generally from the scientific treatment of any object-matter?" ("Erkenntnisstheoretischer Theil," pp. 3-19). The answer to this question is that science can do nothing more than systematise facts and express them by the simplest formulæ. The answer to the ethical question is that science determines the means to morality, which is itself a means to happiness—not necessarily the consciously sought happiness of the individual, but happiness as an "actual result" somewhere. Choice of the end rests finally with the individual, and theoretically there is no way of convincing anyone that his choice is wrong. Practically, however, the possible ends have been reduced to very few. The author decides personally for the formula, "Greatest possible domestic happiness of the greatest possible number the only end, everything else (science included) a means to this". When they have taken the first step—the recognition of science as only a means—others, he believes, will find no difficulty in selecting the same end.

Kleine Schriften. Von Hermann Lotze. Bd. II. Leipzig: S. Hirzel, 1886. Pp. xviii., 530.

Dr. David Peipers here continues the important service of collecting—and editing with utmost care—the minor writings of a thinker who has been singularly fortunate in inspiring followers with devotion to the memory of his work. Vol. i., noticed in Mind, No. 41, swept the field of Lotze's varied activity as a writer till 1846, except that it left over his chief production of that year. This was the article "Seele u. Seelenleben," placed at the beginning of the present volume (pp. 1-204), and much the longest of his three remarkable contributions to Wagner's *Handwörterbuch der Physiologie.* The nineteen other pieces here given are mostly reviews or notices of books written for the *Gött. gel. Anzeigen*, but some of them have a special interest in view of Lotze's own original work on the subjects; particularly the elaborate reviews of Waitz's *Grundlegung der Psychologie* in 1847 (pp. 284-302) and *Lehrbuch der Psychologie* in 1850 (pp. 471-505). There are notices—"Selbstanzeigen"—of his own books on General Pathology and Therapeutics and on General Physiology: also should be mentioned the long essay (pp. 205-72) "Ueber Bedingungen der Kunstschönheit"—a favourite subject—which, after appearing in 1847 in the *Gött. Studien*, was separately issued in the following year. The volume reaches to 1851. There remains a long term of years to be comprised in the third and concluding volume to follow, but these were the years of writings other than minor.

Werth und Ursprung der philosophischen Transcendenz. Eine Studie zur Einleitung in die Erkenntnisstheorie. Von Martin Keibel. Berlin: W. Weber, 1886. Pp. x., 75.

After examining the various arguments on behalf of "the transcendent object," the author concludes that there is no logical proof of it, neither is

it, like the law of causation, an assumption without which all consistent action becomes impossible. Psychologically, the belief in "transcendence" is to be explained as Berkeley explains it: "The mind taking no notice of itself is deluded to think it can and does conceive bodies existing unthought of or without the mind, though at the same time they are apprehended by and exist in itself" (p. 53). From what has been concluded, Solipsism is a necessary deduction. To affirm the independent existence of "the foreign *Ego*" is as much an assumption as to affirm the existence of bodies outside the mind. We may be justified in making this assumption by the demands of the social feelings, as the religious feelings justify us in affirming "the transcendence of God". But how can we determine the degree of validity of any particular assumption? Only by the degree of generality of the need to which it responds. The assumptions referred to would seem, then, to have less justification than the principle of causality; for this last assumption answers to the need that is most widely felt of all, *viz.*, the need of self-preservation. If then we would raise "the transcendence of belief" to universal validity, we must base it on *normative* as distinguished from *actual* grounds; on the emotional needs that *ought* to exist instead of on those that *do* exist. Logically this cannot be attained. It remains for the ethical and the æsthetic philosopher to try if they will be more successful.

Wie ist Verantwortung und Zurechnung ohne Annahme der Willensfreiheit möglich? Eine Untersuchung von Dr. H. Druskowitz. Heidelberg: G. Weiss, 1887. Pp. 40.

The author contends, in opposition to Dr. Paul Rée (see Mind, xi. 137), that man is still "morally responsible," although, as Dr. Rée maintains, the will is neither empirically nor transcendentally free. For the individual man is not merely a link in a natural process, but is also a "rounded-off whole," having a certain "independence" and a consciousness of himself as acting well or ill. Self-consciousness and the power of distinguishing between right and wrong carry with them responsibility to society.

Zur Lehre vom Wesen des Gewissens. Von Dr. A. Weckesser. Bonn: Emil Strauss, 1886. Pp. vi., 98.

The results of this historical and critical study are (1) that the developed conscience has a material principle in the common life of men and a formal or *a priori* element in the feeling of unconditional validity and universality which accompanies the "idea of good" that is its content; (2) that it has three stages of development, *viz.*, the "statutory-authoritative" and the "individual" conscience—which are "preliminary steps before it becomes ethical,"—and, finally, "the ethical-religious conscience". The "ideal type" of the first of these stages is the Mosaic law, "and in the wider sense also social-political morality in the Græco-Roman period". Of the second the type is the affirmation of the individual conscience against society by the Sophists. Christian ethics is the synthesis of both.

Friedrich der Grosse als Philosoph. Von Eduard Zeller. Berlin: Weidmann, 1886. Pp. vi., 298.

The only attempt previous to the present to estimate Frederick the Great as a philosopher was Rigollot's *Frédéric II. Philosophe* (Paris, 1875). Prof. Zeller speaks of his predecessor's work with warm appreciation, the chief defect he finds in it being the want of exact reference to the sources. This he supplies in the notes (pp. 183-296)—full of interesting citations from Frederick's works and correspondence—which he has appended to his own systematic exposition. The exposition itself is of the quality that might be

expected from the author. Nothing is left out that can contribute to a knowledge of Frederick's views, of the changes they underwent, and of the influences by which they were formed. After an introduction (pp. 1-4) there follow five chapters on Frederick's metaphysical, ethical and political ideas, two on his attitude to religion and his views on education, and lastly a brief retrospect (pp. 177-82). The effect of the whole is to convey a vivid impression of the great king's unceasing interest in philosophy, and of the way in which he formed his practical aims in the light of general ideas. The independence of his attitude towards his philosophic friends, especially on questions relating to human nature and human life, is well brought out. Notwithstanding his admiration of the method of Bayle and his general adhesion to the doctrines of Locke, he is found to have always remained to some extent under the influence of the Leibnizo-Wolffian philosophy; and a certain difference of his attitude to religion from that of Voltaire—a difference which exists also between the German and the French "Enlightenment" generally—is traced to his Protestant as distinguished from Voltaire's Catholic education. The author shows what an important influence ancient philosophy—known to Frederick through translations—and especially Stoicism, had on his mind; and sees in his strenuous ideal, and in his "severe feeling of duty," a realisation of Kant's categorical imperative.

Die geschichtliche Entwickelung des Bewegungsbegriffes und ihr voraussichtliches Endergebniss. Ein Beitrag zur historischen Kritik der mechanischen Principien. Von Dr. Ludwig Lange. Leipzig: W. Engelmann, 1886. Pp. x., 141.

The historical part of this book, although very full, is not offered as a complete account of the development of the conception of motion; the author's aim being to arrive at the true conception by the help of the history, rather than to give the history for its own sake. After dealing briefly with the conception of motion in antiquity and in the Middle Ages (c. i., pp. 8-16), he divides the rest of his history into three chapters treating respectively of the periods "from Copernicus to Newton" (c. ii., pp. 16-83), "from Newton to the Present" (c. iii.. pp. 84-108), and "in the Present and Future" (c. iv., pp. 108-125). There follow two appendices containing applications to special problems. The definition of motion given as the outcome of the whole historical development is—change of position of a body relatively to an object of reference. Obvious as it seems, this definition, the author finds, is not even yet applicable without self-contradiction to the actual treatment of motion by science; the older conceptions of an "inherent motion" of bodies and of their "absolute motion" with reference to "absolute space" having left abiding traces in scientific terminology. The contradictions revealed, however, are only apparent, and may be got rid of by a new statement of mechanical and in particular of astronomical doctrines in accordance with the true conception of "the relativity of motion". This the author attempts by means of the subsidiary conceptions which he puts forward of "the inertial system, the inertial scale, inertial rotation, and inertial rest" (p. 118).

Zur Reform des Unterrichtes in der Philosophischen Propädeutik. Von Dr. W. Jerusalem, k.k. Gymnasial-Professor in Nikolsburg. Wien u. Leipzig: A. Pichler's Wittwe und Sohn. Pp. 32.

This contribution to the discussion of "philosophical propædeutic" in the Austrian Gymnasia may be compared with Dr. Meinong's, noticed in Mind, x. 624. Like Dr. Meinong, the author regards psychology as the basis of all philosophical study, and complains that it does not get adequate recognition in the present official scheme. He supports the regu-

lations, however, against Dr. Meinong, in so far as they make the whole of the psychological course, and not merely the elementary part of it, come before logic. In two divisions of his pamphlet he sketches out a course of psychology and logic; suggesting in psychology improvements on the traditional Herbartian treatment.

Ueber die Geistesfreiheit vulgo Willensfreiheit. Psychologischer Nachweis von H. Thoden van Velzen, Dr. theol. zu Jena. Leipzig: Fues (R. Reisland), 1886. Pp. vi., 78.

The author's contention is that freedom ought to be ascribed to the Ego, not to "the will". The conception of "freedom," like that of "will" itself, denotes a certain activity of the mind; hence both conceptions alike should be attached directly to the mind; to attach one of them to the other is as if we were to speak of "the activity of an activity" or "the power of a power". The activity of the Ego is "a willing or a not willing," a choosing among representations. Only of the Ego, as of the active being in us, can it be said that it begins anything of itself; but this expression also ought to be avoided, for without the phenomena of the external world and memories in the mind the Ego would have nothing to choose from. It therefore does not absolutely begin anything, but is only "relatively free".

Die Entstehung der neueren Æsthetik. Von Dr. K. Heinrich von Stein, Privatdozent an der Universität, Berlin. Stuttgart: J. G. Cotta, 1886. Pp. vi., 422.

The author, while recognising that the real origin of reflective thought on art must be sought further back, regards its continuous development in modern times as beginning with the French Classicism of the 17th century. What the different European nations have contributed to æsthetics will best be made clear, he thinks, in following the course of the French influence, which at first was the determining influence everywhere. Accordingly, his history of the origin of modern æsthetics begins with Boileau; reference being made in the systematic exposition to the earlier sources of modern æsthetic theory. The divisions of the book are as follows:—Section I., "French Classicism,"—c. i. "Boileau and his Predecessors," c. ii. "The Connexion with Descartes," c. iii. "The Classical Spirit"; Section II. "The Direction towards the Natural,"—c. i. "The Æsthetic Formulæ of the Period," c. ii. "Shaftesbury and English Classicism," c. iii. "The Descriptive Æsthetics of the British," c. iv. "Dubos, Diderot, The Epoch of Rousseau"; Section III. "Comprehension of Æsthetic Problems by Swiss, Italians, Germans,"—c. i. "The Swiss," c. ii. "Italian Æstheticians, Theories of Music," c. iii. "The Æsthetics of Baumgarten and his School," c. iv. "Winckelmann". The division into sections indicates the author's view of the development of æsthetic theory, in which he finds three chief phases. The æsthetic doctrine that first took shape is summed up in Boileau's hemistich, "Rien n'est beau que le vrai". This doctrine the author finds to be dependent, through Port Royal, on Descartes; citing from a work of Nicole, published in 1659, expressions—*e.g.*, "pulchritudinis fontem in veritate esse"—by which he thinks Boileau may have been influenced. The second phase of æsthetic theory is "naturalism,"—the theory of "imitation of nature". The naturalistic doctrine is best represented by Diderot who made beauty consist in abundance of the "relations" contained in a work of art,—in fulness of content as distinguished from simple expression of some one clear idea. The next transformation was partly accomplished by Rousseau, whose real originality was not in his appeal to the taste for landscape, which was

already characteristic of the "naturalism" of his age, but in his disclosure of the ideal of internal "feeling". What remained still to be seen was the significance of artistic "form"; and this was disclosed by Winckelmann. Notwithstanding the condemnation Rousseau pronounces on art as such, there is much resemblance between his doctrine and that of Winckelmann, as was seen by Diderot (p. 268). Winckelmann's ideal, like Rousseau's, consists in a certain mode of internal feeling, not in a harmony with external nature. The difference is that while Winckelmann finds his ideal realised in the works of antique art, Rousseau seeks it in a return to what he calls, following the manner of speech of his age, the "natural" life. It was Winckelmann's ideal that gave the direction afterwards to German Classicism, especially to its poetical work, Winckelmann's doctrine being, indeed, specially applicable to poetry as Diderot's is to painting; but the positive influence of Winckelmann had to be preceded in the minds of Goethe and Schiller, by the negative influence of Rousseau, the "conscious contradiction of the forms of the ruling civilisation". The author gives very full accounts not only of these chief phases of æsthetic theory but of the doctrines he regards as transitions among them. He notices too in the representatives of each doctrine the elements of other doctrines derived from predecessors. Diderot, he points out, insists on the intellectual element in art—"l'esprit," and is so far in agreement with the canons of French Classicism. Rousseau is strongly opposed to the intellectual tendency, it being inconsistent with his ideal of feeling; but on the other hand he had enough in common with the "naturalism" of his period to find recognition at its hands, and even to be taken for its typical representative.

Received also :—

Proceedings of the Society for Psychical Research, Pt. x., London, Trübner, pp. 208.

Proceedings of the American Society for Psychical Research, i. 2, Boston, Cupples, Upham & Co., pp. 55-131.

J. O'Toole, *Ausa Dynamica*, Improved and Enlarged Edition, Dublin Hodges, Figgis & Co., pp. vi., 73.

T. M. Madden, *On Child-Culture*, 3rd ed., Dublin, Fannin, pp. 24.

W. J. Gill, *Philosophical Realism*, Boston, Index Assoc., pp. 292.

E. Burnouf, *La Vie et la Pensée*, Paris, C. Reinwald, pp. viii., 452.

J. Delbœuf, *Une Visite à la Salpêtrière*, Bruxelles, C. Muquardt, pp. 49.

F. A. Müller, *Das Problem der Continuität in Mathematik u. Mechanik*, Marburg, Elwert, pp. iv., 123.

E. Reichel, *Wer schrieb das "Novum Organon"?* Stuttgart, A. Bonz, pp. 32.

G. Teichmüller, *Religionsphilosophie*, Breslau, W. Koebner, xlvi., 559.

A. Bastian, *In Sachen des Spiritismus*, Berlin, R. Stricker, xx., 216.

E. v. Hartmann, *Die deutsche Æsthetik seit Kant*, 1-3 Lieferungen, Berlin, C. Duncker, pp. xii., 352.

K. Werner, *Die italienische Philosophie des 19ten Jahrhunderts*, Bd. v., Wien, G. P. Faesy, pp. xii., 428.

E. Pfleiderer, *Die Philosophie des Heraklit v. Ephesus im Lichte der Mysterienidee*, Berlin, G. Reimer, pp. ix., 384.

W. Gass, *Geschichte der christlichen Ethik*, ii. 1, Berlin, G. Reimer, pp. xvi., 372.

R. v. Schubert-Soldern, *Grundlagen zu einer Ethik*, Leipzig, Fues (R. Reisland), pp. 168.

H. Ritter et L. Preller, *Historia Philosophiae Graecae*, Pars prima septimum edita (F. Schultess), Gotha, F. A. Perthes, pp. vii., 180.

Notice will follow.

VIII.—NOTES.

ON A CASE OF ALLEGED HYPNOTIC HYPERACUITY OF VISION.

In an interesting paper which appears in the *Revue Philosophique* for November last, M. Bergson of Clermont-Ferrand gives an account of a case of supposed thought-transference or clairvoyance which turns out to be much more probably explicable by hypnotic hyperacuity of vision. The large majority of my readers no doubt conceive thought-transference to be a mere delusion, but they may feel some interest in tracing the abnormal physiological conditions which in this curious instance led at first to the belief that a transmission of ideas or images was taking place by other than the recognised channels of sense. And to the few who have satisfied themselves that such transmission does sometimes occur it is specially important to sift away all the spurious cases which, while apparently supporting, must in the end discredit the novel theory.

Briefly, then, MM. Bergson and Robinet found that a boy, who was supposed to be a clairvoyant, or a telepathic percipient, could read figures and words under the following conditions. One of the observers hypnotised the boy, stood with his back nearly against the light, opened a book at random, held it nearly vertically facing himself, at about four inches from his own eyes, but below him, and looked sometimes at the page and sometimes into the boy's eyes. The book had often to be slightly shifted ; but ultimately the boy could generally read the number of the page. Asked where he saw it, he pointed to the back of the book, just opposite the number's true position. Asked where the binding of the book was, he put his hand underneath the book, and indicated the place where the binding would have been, had the book faced him.

It occurred to M. Bergson—and he deserves full credit for being the first to insist on this precaution—that, small though the figures were, the boy might really be reading them as reflected on the cornea of the hypnotiser. Experiments with slightly altered position showed that in fact the boy could not read the letters unless adjustment and illumination were carefully made as favourable as possible. The letters were 3 mm. in height,—nothing is said of their thickness,—and their corneal image would be about 0·1 mm. in height, as M. Bergson computes, under the conditions employed. This seems a very small image to see distinctly ; but Mr. J. N. Langley and Mr. H. E. Wingfield, who have kindly tried some careful experiments to test this point, inform me that they can read in each other's cornea the reflexion of printed letters of about 10 mm. in height. We know from Binet and Féré's experiments, &c., how greatly the hypnotic state does sometimes increase acuity of vision ; and we may, I think, conclude that the boy probably did read the letters on his hypnotiser's cornea.

What, then, are we to make of the boy's statement that he saw the words as though in a book facing him ? M. Bergson feels sure that this was the boy's real belief. There was no suspicion of charlatanism, and in fact the boy disliked the experiments, and now, as M. Bergson writes to me, refuses to renew them. M. Bergson supposes, and I think justly, that this was a case of *simulation inconsciente ;* the hypnotised subject genuinely referring his sensations to the source to which his *first* hypnotiser (a believer in thought-transference) had suggested to him that they were due.

And, in fact, this unconscious simulation which leads the subject to refer his unusual sensations to the special cause which his hypnotiser, or some

caprice of his own mind, suggests, is a not uncommon and a very interesting phenomenon. It was observed, for instance, by Elliotson, who pointed out a good many hypnotic peculiarities which his successors are now gradually rediscovering. It is a *hypnotic exaggeration* of a familiar phenomenon, namely, of the large infusion of erroneous inference which we most of us import into the account which we render to ourselves of our ordinary sensations.

A particularly curious case is briefly described in the *Journal of the Society for Psychical Research*, June, 1884. A man was brought to us who, when hypnotised, could often name cards held in front of him, although his eyes had been plastered up and bandaged in a most elaborate way. The man's friends took this for clairvoyance, and the man assented, being sure that he could not see the cards in the usual way. They 'flashed upon him,' as he said. Now after a good deal of puzzling over the case, Mr. R. Hodgson found that he also could sometimes manage to see over similar bandages, through small chinks between the skin and the paper gummed over the eyes. But he, too, found that he saw fitfully, the power of vision seeming to come and go,—and he actually could not tell with which eye he was seeing, except by covering each eye in turn with his hand. The distorted position of the eyeball, and the minute and oddly-placed channels of vision, produced so much confusion that there seemed no reason to suppose that the hypnotised subject's belief that he was seeing 'clairvoyantly' was other than genuine.

The case of M. Bergson's boy seems to have been a similar one. And his idea that he was reading from the book seems to have been a sort of compromise between the feeling that he was reading *somewhere* and the hypnotiser's suggestion that the words were being transferred supernormally from mind to mind.

Thus far, then, M. Bergson's narration and explanation seem credible enough, and his argument as against thought-transference in this boy's case seems well made out. But he proceeded to further experiments which, as recounted, seem incredible, and which may lead some readers to distrust the accuracy of the whole series.

To explain the difficulty, I must first point out that the word hyperæsthesia is loosely used for three different classes of phenomena. It is used (1) for an exaggeration of the familiar action of specialised organs, as when the eye is sensible to very small amounts of light. It is used (2) for alleged perceptions, which would imply a specialisation of what I may term our *undifferentiated fund of nervous sensibility* in novel directions. Sensibility to the action of magnets, of metals in contact, of medicaments at a distance, may or may not exist, but should scarcely be called by the same name as (say) the eye's extra sensitiveness to light. And again, the word is used (3) for cases where our non-specialised organs are credited with performing functions which, so far as we can see, demand a definite sense-specialisation, or our specialised organs are credited with functions which, on measurable anatomical grounds, appear to overpass the limits of their specialisation. This last class of cases must be received with extreme caution.

Well, M. Bergson says that he showed the boy a microscopic photograph of twelve men, its longest diameter 2 mm., and that the boy saw and imitated the attitude of each man. Also that he showed the boy a microscopic preparation, involving cells not greater than ·06 mm. in diameter, and that the boy saw and drew these cells.

Now I might, in the first place, object that thought-transference was not formally excluded, since M. Bergson himself knew the photograph and the look of the cells. I do not press this, for the other experiments seem to me to negative thought-transference in this case ; I merely point out that

if we wish to prove that a subject does not receive an image from our minds we should present to him an object with which we are ourselves unacquainted.

But the real difficulty is as regards the *minimum visibile*. It is usually supposed that in order to produce a definite image more than one retinal cone must be stimulated; and that consequently no object can be separately discernible which does not subtend (say) an angle of sixty seconds, or whose retinal image is less than (say) ·004 mm. in diameter. Floating particles, none of them exceeding ·0029 mm. in diameter, have, I believe, been seen as a *cloud* in a ray of electric light sent through a tube of filtered air, but have never been seen *separately* by the naked eye.

Now the *retinal image* of an object itself only ·06 mm. in diameter, and placed within the range of distinct vision, will be much less than ·004 mm. in diameter. To bring it up to this minimum the retinal image must be $\frac{1}{15}$ of the size of the object itself; and this implies a nearness to the eye involving mere darkness and blur. The microscopic slide was presumably transparent; but nothing was said as to the transparency of the *photograph*, and yet the points distinctly visible on the photograph must have been even *smaller* than the cells on the slide.

A letter with which M. Bergson has favoured me has done much to remove these difficulties. It seems that the photograph was transparent, and that the boy held it close to his eye. Moreover, after seeing the photograph the boy could not read ordinary print. "C'est trop grand," he said; and it was some time before the eye (which M. Bergson believes to have been always myopic—query hypermetropic?) resumed its normal state. It seems, then, conceivable that hypnotic suggestion had induced (by spasm of the ciliary muscle?) some change in the shape of the crystalline lens, which made the eye a microscope for the time being. Mr. George Wherry has kindly communicated to me two somewhat analogous cases, where ciliary spasm (itself induced by microscopic or telescopic work) led to uniocular diplopia, in one case even triplopia. In these cases *irregular* ciliary spasm turned the lens into a kind of *multiplying glass*:—is it possible that M. Bergson induced a *regular progressive* ciliary spasm, which turned the lens into a powerful *magnifier*?

Turning back to the question with which we started, the possibility of a hyperæsthetic explanation of cases of supposed telepathy, I must add that I earnestly hope that the experiments recorded in *Phantasms of the Living* may receive careful criticism from this point of view. Few, if any of them, will, I think, be found explicable by the *cornea-reading* discussed above, but there may be other sources of error which have escaped our care. Yet in the hands of some critics hyperæsthesia itself assumes attributes almost magical. In the *Revue Philosophique* for December Dr. Ruault maintains that he and others have frequently sent subjects to sleep "by an effort of will" in an adjoining room; but that the real cause of the sleep was the suggestion given by the changed sound accompanying the hypnotiser's quickened circulation, which the subject hears through the wall. This is meant, it seems, to apply to the Havre case, now well known, of *sommeil à distance*, where Dr. Gibert or M. Pierre Janet can throw Mme. B into the hypnotic trance, "by an effort of will," from their houses to hers.[1] Yet I confess that, whatever may be the true meaning of this curious history, I find it hard to believe that a peasant woman is sent to sleep by "the sound of a going" in the arteries of an elderly physician, at a distance of half a mile.

FREDERIC W. H. MYERS.

[1] An account of this case will be found in the *Proceedings of the Society for Psychical Research*, Part x., Art. "Telepathic Hypnotism".

RICHARD SHUTE.

The death of Richard Shute, of Christ Church, which took place on Sept. 22, is a serious loss to philosophical studies at Oxford.

In 1877, when quite a young man, Shute published his *Discourse on Truth* (reviewed by the Editor in MIND, ii. 392)—a remarkably ingenious work, indicating a reaction from the teaching of Mill along lines which were perhaps insufficiently defined, but abounding in bright suggestions by the way which give it a value quite independent of the tenability of the positions which it seeks to maintain. This work attracted attention in Germany, and was made the basis by Uphues of his treatise, *Grundlehren der Logik nach Richard Shute's Discourse on Truth bearbeitet* (Breslau, 1883). In later years Shute gave much time to Aristotelian studies, especially to the text of the *Physics*. Some of the results of these studies have already appeared (*Anecdota Oxoniensia*, Classical Series, vol. i. part 3, Aristotle's *Physics*, book vii., collated by Richard Shute, M.A. Clarendon Press, 1882); and papers which he has left behind contain additional matter which, it is to be hoped, may yet be published.

It is not, however, of the books which he might have written, had he lived, that those who knew him best are now thinking most, but of the loss sustained by a system of education which owes much of what is best in it to influence conveyed in private conversations. The forces by which the young students of *Literæ Humaniores* at Oxford are affected may be distinguished broadly as 'rhetorical' and 'dialectical'. Of these the 'rhetorical' are naturally the more powerful in most cases. The air is full of views on all subjects of speculative and practical interest—abstract and one-sided because received passively from lectures and epitomes and magazine-articles, not actively apprehended in the original research of the student himself. These abstractions are the natural product of a place in which many young men beginning to think are thrown together, and they would not do much harm if they were not useful. But they are eminently useful. The Oxford Examination-system, as such, in spite of many honest efforts on the part of those who work the machine, gives a decided advantage to the man who can make a clever 'rhetorical' use of 'probable opinions'; and the rhetorical habit encouraged by this system bears fruit afterwards in influence exerted through various popular channels, of which journalism is perhaps the most important. It may be admitted that wide practical influence in a country like England could not be obtained without the 'rhetorical habit'—no 'movements' could be started, and the life of the nation would perhaps stagnate; but in the spheres of speculation, science and literature, within which the activities of a university are properly confined, it is a mischievous habit. Happily however this uncritical 'rhetorical habit,' fostered by the Examination-system, is somewhat chastened by a spirit of 'dialectic' which the system has not succeeded in entirely banishing from Oxford teaching. Much time is still given (and this is one advantage at any rate of the College-system) to private conversations between teacher and single pupil. These conversations are the hardest pieces of work which the teacher has to do, if he does them properly; and the most useful instruction received by the pupil is often derived from them, if he prepares himself for them by critical study of the subjects discussed.

It was in such conversations that Shute excelled. "He riddled through one's seeming knowledge," as one who was once his pupil has expressed it. This was the first effect of his conversations. Beginners were often discouraged, and thought that there was no truth to be obtained on the subjects discussed. But when they came to know Shute better they began to

suspect that he was even enthusiastic about the truth. His enthusiasm was perhaps all the more catching that it was, at first, only suspected ; at any rate, his pupils followed his singularly lucid expositions addressed studiously to the logical understanding, with the growing feeling that it is a solemn duty which man owes to himself, as a rational being, to try to be clear-headed. Intellectual clearness, as such, seemed to be presented as a duty. But his more intimate pupils and friends came to see that he valued intellectual clearness not merely for its own sake, but as indicating that ideas incapable of logical handling were being kept out of discussion and left to reign in their own proper sphere. These pupils and friends observed that in his philosophical conversations (as in his ordinary talk) he held much in reserve. He was reticent—almost ironically so—about those ideas which may be summarily described as 'moral and religious,' when others were tempted to discuss them and hope by discussion to make them clearer. This, those who knew him well had learned to understand, was not because these ideas did not interest him, but because he felt that they were not objects of speculation but practical principles of life. And he showed how deeply they interested him by his own life. The acute dialectician never asked himself 'the reason why' he should spend his failing strength in doing his best for the mental improvement of his pupils. He simply assumed that it was worth doing ; and that was his 'metaphysic of ethics'.

In the foregoing account of Shute's Oxford work, stress has been laid on his personal influence, because it is the influence of persons—the significant silence, or the timely word, with effects reaching through a whole lifetime —not the influence of books produced which is the really important philosophical influence of Oxford. Green's influence, for example, was of this kind. It is difficult, indeed impossible, to convey to others an adequate impression of the philosophical influence of a person. But Shute's friends and pupils who may read this notice will understand why prominence has been given to his personal influence ; and others, who have been fortunate in their philosophical teachers, will understand that a philosophical reputation which, like his, rests on a personal influence powerful to shape lives, is placed on a very solid foundation.

At the end of this necessarily inadequate estimate of Shute's philosophical life and influence, a few lines respecting the facts of his external life will not be out of place. He was born in 1849. He belonged to an old family which was already settled at Monkton Combe in the time of Elizabeth. His school was Eton. From Eton he went to Cambridge, where he resided for a year, and then migrated to Oxford. In 1873 he took a First Class in *Lit. Hum.*, and was elected to a Senior Studentship at Christ Church. In 1875 he went to Bombay as Professor of Logic and Moral Philosophy, but his health obliged him to return to England within a year. Coming back to Christ Church in 1876, he soon became Tutor, and performed the duties of his Tutorship up to the day of the sudden beginning of his last illness. He examined several times in *Lit. Hum.;* he took an active part in college business ; and held the office of Proctor when his last illness came upon him. He died in London on Sept. 22, 1886, and was buried at Woking.

J. A. Stewart.

Mr. Patrick Proctor Alexander, M.A., the very clever author of *Mill and Carlyle* and (following on Mill's replies in the third edition of the *Examination of Hamilton*) of *Moral Causation, or Notes upon Mr Mill's Notes* (1868), also of *Spiritualism: a Narrative with a Discussion* (1871) and other writings, died at Edinburgh on Nov. 14th last, at the age of 63.

The Aristotelian Society for the Systematic Study of Philosophy.—The eighth session commenced with the addition of ten new members to the ranks of the Society. Mr H. W. Carr, a Vice-President, was elected to fill the office of Hon. Secretary, vacated by Mr. Rhodes in consequence of illness; and Mr S. Alexander, of Lincoln College, Oxford, was elected a new Vice-President. At the first meeting, Monday, Nov. 8, the usual address was delivered by the President, the subject this year being "The Reorganisation of Philosophy". At the following meeting, on Monday, Nov. 22, Mr. D. G. Ritchie read a paper on "T. H. Green's Political Philosophy," which was followed by a discussion.

The Philosophical Society.—The present session was opened on Tuesday, 26th Oct. The subject for the ensuing year is Lotze's *System of Philosophy*. Information is obtainable from the Secretary, J. M. Rigg, Esq., 9 New Square, Lincoln's Inn.

Dr J. M. Cattell has been appointed Assistant-Professor in the University of Pennsylvania (Philadelphia), and will devote himself to the instruction of advanced students in psychophysical work.

The Journal of Speculative Philosophy.—Vol. xx. No. 2. S. S. Heberd—The Nature of Thought. K. Fischer—A Critique of Kantian Philosophy (trans.). E. M. Mitchell—The Philosophy of Pessimism. J. Jastrow—On the Symbolic System of Lambert. Hegel—On Giordano Bruno (trans.). Notes and Discussion, &c.

Revue Philosophique.—An. xi., No. 10. G. Séailles—L'origine et les destinées de l'art. G. Sorel—Sur les applications de la psychophysique. L. Carrau—La philosophie religieuse de Berkeley. G. Tarde—Avenir de la moralité. Rev. Gén. (A. Penjon—Travaux récents sur la psychologie d'Aristote). Analyses et Comptes-rendus. Rev. des Périod. No. 11 P. Souriau—La conscience de soi. F. Paulhan—Le devoir et la science morale (i.). C. Dunan—Le concept de cause. H. Bergson—De la simulation inconsciente dans l'état d'hypnotisme. Notes, &c. (A. Binet, et J. Delboeuf—Les diverses écoles hypnotiques). Analyses, &c. Rev. des Périod. Société de Psychologie physiologique (F. Paulhan—Note sur la combinaison des images consécutives). No. 12. Pierre Janet—Les actes inconscients et le dédoublement de la personnalité pendant le somnambulisme provoqué. G. Le Bon—Application de la psychologie à la classification des races. L. Arréat—Sexualité et altruisme. F. Paulhan—Le devoir, &c. (fin.). Analyses, &c. Rev. des Périod. Soc. de Psych. phys. (A. Ruault—Le mécanisme de la suggestion mentale. J. Babinski—Transfert d'un sujet à un autre sous l'influence de l'aimant).

La Critique Philosophique (Nouv. Sér.).—An. ii., No. 9. F. Pillon—J. Milsand. L. Dauriac—Parole et musique. C. Renouvier—Des problèmes de l'esthétique contemporaine: La théorie du vers français. L. Dauriac—Un livre nouveau sur Pascal. Notices bibliog., &c. No. 10. C. Renouvier—Examen des *Premiers Principes* de H. Spencer (suite). F. Pillon—La psychologie animale d'après un disciple de Darwin—L. Dauriac—M. F. Brunetière esthéticien et critique. F. Pillon—Un ouvrage récent sur l'alchimie. L. Dauriac—Homère éducateur. No. 11. C. Renouvier—Examen des *Premiers Principes*, &c. (fin). L. Dauriac—L'âme du nouveau-né. E. Blum—Hypnotisme et pédagogie . . . F. Pillon—Paul Bert.

Rivista Italiana di Filosofia.—Vol. ii., Disp. 2. P. L. Cecchi—Il Cristianesimo primitivo secondo B. Labanca. N. Fornelli—Esposizione

generale delle teorie pedagogiche di Herbart, &c. C. G. Mor—Proposta pedagogica di un positivista. Bibliog, &c. Disp. 3. F. Bertinaria—Idee introduttive alla storia della filosofia. R. Benzoni—La Simpatia nella morale dell' evoluzionismo e nel sistema Rosminiano. F. Buttrini—Del Programma e delle Istruzione 23 ottobre 1884 per l'insegnamento della filosofia elementare. Bibliog., &c.

Rivista di Filosofia Scientifica.—Vol. v., No. 7. G. Cesca—Il concetto di sostanza. G. Cantoni—Considerazioni su alcuni fenomeni vitali dei corpi inorganici. Riv. Sint. Riv. Anal. Riv. Bib. (W. W. Ireland, *The Blot upon the Brain*, &c.), &c. No. 8. E. Morselli—Fisiopsicologia dell' ipnotismo. V. Grossi—Il fascino e la jettatura nell' antico oriente (i.). E. Carnevale—Della pena nella scuola classica, &c. Riv. Anal., &c. No. 9. B. Labanca—Concetto della filosofia cristiana. G. Tarantino—Studî nella psicologia inglese : Giovanni Locke. V. Grossi—Il fascino, &c. (ii.). Note Critiche. Riv. Bib., &c. No. 10. G. Cesca—La relatività della conoscenza (i.). A. Vaccaro—Sulla vita dei popoli in relazione alla lotta per esistenza. Note Critiche. Riv. Anal., &c.

Zeitschrift für Philosophie, &c.—Bd. lxxxix., Heft 2. P. Markus —Die Yoga-Philosophie nach dem Râjamârtanda dargestellt. F. Sattig—Der protagoreische Sensualismus, &c. (Schluss). W. Ribbeck—Zwei Werke über Kant's Erkenntnisstheorie. Recensionen. Bibliographie, &c. Beigabeheft. M. Schaster—Ueber einige Principienfehler der modernen Æsthetik. K. C. Planck—Die Grundbegriffe des Rechtes. M. Diez—Die realistische Philosophie K. C. Plancks. E. v. Hartmann—Ueber die Lust als höchsten Wertmassstab. Recensionen.

Philosophische Monatshefte.—Bd. xxiii., Heft 1, 2. W. Ribbeck—Ueber Plato's *Parmenides*. F. Grung—Der Begriff der Gewissheit in der Kantischen Philosophie. Recensionen u. Besprechungen. Litteraturbericht. Bibliographie, &c.

Vierteljahrsschrift für wiss. Philosophie.—Bd. x., Heft 4. G. Heymons—Analytisch, synthetisch. B. Erdmann—Zur Theorie der Apperception (ii.). B. Kerry—Ueber Anschauung u. psychische Verarbeitung. R. v. Schubert-Soldern—Der Kampf um die Transcendenz. Anzeige. Selbstanzeigen, &c.

Philosophische Studien.—Bd. iii., Heft 4. A. Lehmann—Ueber die Anwendung der Methode der mittleren Abstufungen auf den Lichtsinn. H. K. Wolfe—Untersuchungen über das Tongedächtniss. A. Köhler—Ueber die hauptsächlichsten Versuche einer mathematischen Formulirung des psychophysischen Gesetzes von Weber. L. Lange—Die geschichtliche Entwickelung des Bewegungsbegriffes u. ihr voraussichtliches Endergebniss (Schluss).

Erratum.—In Mr. S. Alexander's article on "Hegel's Conception of Nature" in Mind No. 44, p. 501, line 16, *for* unity *read* variety.

No. 46.] [April, 1887.

MIND

A QUARTERLY REVIEW

OF

PSYCHOLOGY AND PHILOSOPHY.

I.—ON 'ASSOCIATION'-CONTROVERSIES.

By Professor A. Bain.

The history of the psychological doctrine, named familiarly the Association of Ideas, has now been fully given by various writers, the latest and completest summary being the article by Prof. Croom Robertson in the *Encyclopædia Britannica*, vol. ii.

Like all the higher generalities of mind, these laws need not only to be verified by facts, but to be guarded by proper language, a matter of no small difficulty considering that we have to rely upon terms of common life wholly unsuited to such lofty applications.

By Association has always been understood in a general way, that the recall, resuscitation or reproduction of ideas already formed takes place according to fixed laws, and not at random. The assigning of these laws was the first contribution to a science of the human intelligence; while the ultimate shape given to them, whatever that may be, will mark the maturity of at least one portion of that science.

The name further implies that the mental reproduction is ruled by certain assignable principles of connexion or relationship between our mental elements, such that the

one now present restores another not present, yet related according to one or other of the supposed relationships. Thus a word recalls the thing named, by a law of association founded on the frequent concurrence or proximity of the two in the consciousness.

The classifications of these supposed bonds of relationship among ideas are various, and need not be repeated further than to say that two relationships have survived in nearly every classification : I mean Association by Contiguity, and the law of Similars or Similarity. These have a commanding importance in all the schools of Associationists. Contrast is also admitted as a reproductive force, but, however viewed, is unable to take the same rank as these others. I shall advert to it presently.

After a survey of the leading controversies that have clustered round these laws, I mean to devote a considerable space to the problem now uppermost among psychologists, as connected with the terms Attention and Apperception ; taking for the text Wundt's recent handling in his work on Logic. The settlement of this problem unavoidably re-acts upon all the other controversies.

I. The Terminology of Association.

This subject is included in Hamilton's elaborate Note, in his *Reid*, on the history of ' Association '. His objections to the main word itself are (1) that it implies Co-existence, or a connexion between co-existences already known, and (2) that it supposes a bilateral and equal correlation. Also the words, Chain, Concatenation, Series, Train, Movement, are each more or less unsuitable as the leading term for the various operations to be comprised under it. On the whole, Hamilton thinks that "as among the earliest, so perhaps the *best* terms for the process of reproduction are to be found in Suggest, Suggestion, Suggestive, Co-suggestive, with their conjugates". The metaphor originally perceptible in these words has now disappeared.

Undoubtedly any appropriateness in the term Association is confined to the law of Contiguity, under which the companionship of the related ideas is at its maximum of fulness ; seeing that the occasion of their coming together by a process of resuscitation is their being more or less frequently together previously. In Similarity, the resuscitation is not preceded by any previous companionship : the two members that have come together, as a consequence of their resemblance, may have been at the greatest distance from each other in our former experience. Hence, for Similarity,

the word Attraction would be the most apposite, while unsuited to Contiguity.

II. Whether, or how far, the prevailing enumeration of the laws of Association exhausts the powers of Intellect?

This is to be the final question of the paper; and it is adduced here with a view to a partial clearance of the way.

I say, then, that no enumeration of these laws expresses everything that is properly included under Intellect. For, in the first place, it is conceded on all hands, with mere variety in the statement, that Discrimination is a fundamental property of our intelligence, quite as much as any process that can be referred to laws of Association; it comes with the earliest germs of mental life, and accompanies it unceasingly to the last. It plays a part in the formation of the ideas, images or elements that are pre-supposed in Association. (See Hamilton's *Reid*, p. 243, n.) Unless it be Contrast, none of the commonly assigned associating principles expressly recognises it; while any of the received definitions of Contrast must be greatly widened to embrace the operation in all its breadth.

I hold, then, that, in any complete view of Intellect, Discrimination must be ranked as a primary attribute; while it is the business of Psychology to trace its consequences to the uttermost.

In the next place, the law of Contiguity, if defined as a power of associating into one mental group *two* or more discrete members, is not wide enough. The intellectual property that it expresses is equally operative in the formation and the persistence of the ideas themselves. In all probability, the simplest idea is already a complication; and its parts are bound into a mental unity, or whole, by the force underlying contiguous adhesion. But even if this be not so, repetition, continuance, attention—the circumstances that operate in maturing our strictly contiguous growths—are needed to make the simplest idea self-subsisting, as the idea of a sweet or bitter taste, a smell, a soft touch, a melodious sound, a colour. It is common for writers on Psychology to treat of the formation of the idea before entering upon the associating principles; this is simply an expository convenience. The state of the fact is admitted by Mr. Sully, when he assigns the very same conditions of reproduction to single images and to the linking of these in composite groups by contiguous adhesion. There is, in truth, but one law at the foundation of this reproductive process; but as the term Association is inapt to express the self-subsistence

and reproduction of images, another term is desirable. In other words, the process of converting the Sensation, or primary Impression, into the Idea, supposes the very same psychical force as that expressed by the law of Contiguity.

III. Is Contrast to be regarded as a distinct and independent law of Association ?

Contrast is a comparatively rare and exceptional bond of reproduction. We cannot make six transitions of thought without involving the other two laws—Contiguity and Similarity, but we may be hours and days without acting upon Contrast. Hamilton and others, including Lotze, regard the relation of contrariety or contrast as equivalent to correlative parts of the same whole. A much bolder use of this explanation is made in dealing with the question next to be considered, and I do not discuss it here. I merely remark that while co-relatives, as light and dark, up and down, virtue and vice, readily suggest each other, I feel no difficulty in referring the process to the other laws of the mind. Lazarus suggests conjointly Dives, Abraham's bosom, and the place of insufferable heat; and though one of the three links is of the nature of a contrast, yet in that too probably Contiguity is the operative resuscitating bond.

IV. Whether Contiguity and Similarity may be reduced to one statement ?

This is a far more serious consideration. Various attempts have been made to merge the two in a single principle. Hamilton, in the *Reid*, refutes some of these attempts, and affirms as ultimate the two principles—Repetition, under which he places Similarity, and Redintegration. In the *Metaphysics* (Lect. xxxi.) he holds that the two laws of Simultaneity and Affinity are carried up into unity, in the higher law of Redintegration or Totality.

According to Lotze, Similarity and Contrast are associations of impressions that are either parts of a simultaneous whole or parts of a successive whole. So that with him, as with Hamilton (in the *Metaphysics*), the concurrence of parts of the same whole is the ruling principle of reproduction, explaining alike Contiguity, Similarity and Contrast.

I must, therefore, make some remarks upon the method of regarding the entire compass of Association as the revival of a whole or totality on the presentation of some part of that whole. Such cases no doubt exist. After we have been familiarised with any complicated object, made up of definite parts, as an animal body, or a machine, when we

see one of the parts or members we are reminded of the entire body or machine. It is thus that Owen reconstructed extinct animals from a few bones. Nay, further, any loose collection or aggregate, if it is persistent and familiar, will be brought to view on our seeing one of the individual objects: as pictures in a gallery, or books in a library, or members of a household. All such would be ordinary examples of the law of Contiguity. But that law is not dependent for its operation on the objects being either united in an organised body, or made up into a grand whole. I imagine that the essence of the law is to couple each thing with the one standing next, and therefore succeeding to it in the view, and to have no regard to the multiplicity needed to make up a collection. The process is not in a state of suspension till we can bring up a sufficient number of things to make a recognised bundle or whole. To say that when I have learned to connect the English word 'king' with the Latin 'rex,' I am proceeding from a part to a whole is to stretch the meaning of part and whole beyond all usage; to introduce into the conditions of Association an alien circumstance, something never taken into account as a condition of memory. We explain a failure in effective association, by want of frequency, want of attention, or want of plasticity at the time; not by want of some grand total or collection to place the thing in. The most vagabond or isolated fact can be associated if there be any one obtainable handle. Association needs two things, and needs no more; yet every assignable couple is not necessarily a whole. I could learn half a sentence without going further. If I were to complete it, the sense would undoubtedly be a help to the memory, but would not vitiate the association of the incomplete half.

More abstruse is the question whether Similarity can fall under Contiguity in any mode of stating it. Of the various attempts to make this resolution, I will advert to the two most recent, the one by Mr. Ward, and the other by Mr. Bradley. For my own part, I still adhere to the essential separateness of the two principles; for although they concur more or less in actual working, they are the starting-points of widely different mental movements: the one class going out in the direction of routine or use and wont, the other leading to new assemblages of ideas in such forms as classes, generalities, imaginative comparisons, strokes of practical invention, and so on. Prof. Croom Robertson and Mr. Sully concur in the recognition of their distinctness.

The position of Mr. Ward, as well as of Mr. Bradley,

involves the absolute denial of such a state of mind as the consciousness of agreement. Now in cases of extreme remoteness of the objects brought together, there is a burst of excitement, which I have often called the flash of similarity, and which Mr. Ward treats as a pure fiction. The great classical instances of discoveries of generalisation, such as the Newtonian fetch involved in rising to universal gravity, cannot, I consider, be received by any mind in the same terms, and with the same emotion as an ordinary routine train of contiguous association; for example, the phases of the moon as they have always impressed mankind. In like manner, the great strokes of identity in the poetical comparisons of all ages give us an agreeable surprise, part of which is due to bringing together for the first time things never supposed to be like but, when once brought together, found capable of illustrating one another.

The flash of a great discovery of identification is one extreme of the workings of Similarity. The other extreme is equally important in its bearings on the present question; I mean the consciousness of identity without the power of resuscitation, a fact as energetically denied by Mr. Bradley as the other by Mr. Ward. My contention is, that times without number we are in this position, namely,—that of something seen, or heard, or mentioned, we remark, 'I have seen or heard that before, but I cannot tell where or when'. This is a fact; and is surely different from the state implied when I say 'That's new to me,' 'I never saw or heard that before'. Recognition or sense of identity, without the power of recall, is the extreme instance of Similarity bereft of the aid of Contiguity. The previous impression, whose likeness to the present gives us the sense of recognition or repetition, is too feebly associated within itself to start into life again. That, to my mind, is the obvious rendering of the fact. A little more familiarity, in the first instance, would have strengthened the contiguous association between the parts of the resembling object and between it and collateral circumstances of time and place, and the result would have been, not a bare sense of identity with something unknown, but an actual resuscitation of the whole fact in its fulness and in its connexions with other things.

The feeling of recognition or identity has a still wider sweep in assuring us that a train that we recall is accurately recalled. Often we have some misgiving lest we may not have recovered the precise series of particulars that we formerly knew; such misgiving is generally right, and leads us

to try again till we have corrected the mistake, and feel satisfied that we are at length correct.

Let me next advert to Mr. Bradley's view of the consciousness of identity without recovery of the identified image. He says: "If anything is brought up which suggests agreement, then this must involve what is called contiguity. For apart from such contiguity there would be nothing to recognise." But I humbly think this is to mis-state the order of occurrence. We do not first bring a thing up, not knowing whether it is like or not like, and then examine it to see if there be any likeness. Of course, this would involve Contiguity, and an occult principle besides, namely, a power of bringing up on suspicion, without anything to go upon at all; a mere tentative restoration, to be verified after it is brought into full view. There is no such power as this, so far as my knowledge goes. If something present to the view recalls a past thing like it, it is because of the felt resemblance. However we may express it, this is the order of proceeding. We have laid up in our previous experience some fact, appearance, notion, image; we, at the present moment, have in view some fact that was never in contiguity with the former but possesses a certain amount of resemblance to that: the immediate consequence is that the previous fact is recalled; the stroke of recall being, as it seems to me, simple and ultimate, and not resolvable into any roundabout process or succession of mental movements.

Mr. Ward's explanation of similarity in diversity is the easiest to state. His opinion is that when *abx* recalls *aby*, there is no more similarity than when *abc* recalls *def*. Now whether there be more or less similarity is scarcely the point; there is similarity in both to the extent of the common element *ab*. But there is certainly a difference in the two situations, a parting of the ways, with the most widely different results. And even in the immediate act there is an assignable difference. The combination *abc* recalls the former residua of *abc* that were in contiguity with *def*: there is no halt or hesitation in the matter. But when it is a question of *abx* bringing up *aby*, aggregates that were never in contiguity before, there is a new condition present. For, just as the *ab* in the one group tends to strike into the previous trace of *ab* in the other, the *x* in the first works by similarity on its own account, and tends to strike into a previous residuum containing *x*; and it is an open question which one of three courses will be taken, the recall, namely, of *aby*, or of a group *nox*, or of nothing at all. The mind has a new mode of consciousness under this situation; we

never confound it with the recall of *abcdef* at the instance of *abc*. It is a matter of psychological interest to ascertain the circumstances favouring the operation of similarity under diversity in cases involving important results; seeing that there is a cause of obstruction in the fact of diversity—an obstruction often so serious as to render the recall a matter of doubt and uncertainty. In all this I am fully borne out by Mr. Sully. (See *Outlines of Psychology*, p. 268.)

V. Whether Association can stand as one member in an enumeration of Faculties, such as those of Locke, Reid, Stewart, Hamilton?

It is not difficult to show that the Association of Contiguity is the greatest part of what is usually called Memory; while Similarity is a further aid. Moreover, that Similarity, assisted by Contiguity, explains the ordinary reasoning processes, as designated under Deduction and Induction, seems to me to admit of very little doubt, but I defer the consideration of it to the handling of the final topic of this paper. The placing of Association in the list of Intellectual Powers by Stewart has been abundantly shown to be tautological.

VI. How should Association stand in reference to the great problems of Philosophy: the theories of Space, Time, Causality, Substance and the like?

On referring to the recent work of Professor Ferri upon Association (see MIND viii. 294, x. 124) I find that with him Association-theories are tested mainly by their bearing on his conclusions regarding these problems. His induction of the laws from the facts of our intelligence, apart from such questions, is, I think, extremely perfunctory.

We are, at this moment, in the midst of a conflict of views as to the priority of Metaphysics and Psychology. If, indeed, the two are so closely identified as some suppose, there is no conflict; there is, in fact, but one study. If, on the other hand, there are two subjects, each ought to be carried on apart for a certain length, before they can either confirm or weaken each other. I believe that, in strictness, a disinterested Psychology should come first in order, and that, after going on a little way in amassing facts, it should revise its fundamental assumptions, and improve its language and definitions: and, when so revised, should resume consideration of the wide field of mental facts of the neutral or disinterested kind—those that deal with practical applications rather than with the metaphysical groundwork. After a few further strides, we might come back again to the founda-

tions, and so on, alternating between the two lines of research, yet insisting on their being conducted independently. This is necessary in order that we may not fall into a circle. It is said, for example, that if we embark on the promiscuous field of mental facts, with a bad Metaphysics, that is, with wrong notions as to External Reality, Cause, Substance, and so on, all our results will be vitiated and worthless; nevertheless, I do not see any mode of attaining a correct Metaphysics until Psychology has at least made some way upon a provisional Metaphysics, which it returns after a time to rectify and improve. (On the relations of Psychology to Metaphysics, see in MIND, Vol. viii., the Editor's opening article and Mr. James Ward's first article entitled "Psychological Principles".)

Psychology imperatively demands a well-defined vocabulary. The ultimate notions of the science must be free from ambiguity; but to express ultimate facts with precision, and to decide what things are ultimate, constitute a laborious part of any science, most of all of mind. The process of see-saw is eminently called for here. We go on a certain way upon given definitions; we find them open to exception; we go back and correct them, and proceed again, until some new flaws are discovered. But to stay debating ultimate questions, before making any forward movement at all, is a device that may be handed over to the Committee for arranging the debates in Pandemonium.

As regards Association in particular, nothing can be more vital than a correct mode of stating and understanding the mental elements or units that enter into the associating operations. The Impression, Sensation, Presentation, Perception, Idea, Image, Trace, Residuum, Representation, Memory, Recollection, must all be properly reduced to distinct expression, and rendered free of ambiguity, before we know what we mean by Associative Reproduction, or Suggestion.

The starting-point of the clearing operation evidently is to distinguish the Sensation from the Idea—the state of mind under full actuality from the trace, residuum, survival and reproduction of that when the actuality has ceased: What is my precise mode of mind in surveying a fine prospect, and what is that other mode when I am remembering it? Nor is this by any means a very simple determination. For what we choose to call sensation, presentation or actuality, is already a mixed mode, a product of associating forces. What I now see, I may have seen before, and that previous seeing combines its results with the present view. Even

if the scene is quite new, its elementary parts are not new ; and old impressions of hills and woods and streams have an influence on my present impression ; so that even the sensation is not a pure or unmixed element to begin with. Then comes the definition of the Idea, or whatever name we choose to give to the persistence and reproduction of the scene as an effect of memory. How far does this mental reproduction correspond to the original, and what are its essential differences, drawbacks or points of inferiority? When we speak of recalling a prospect to the mind, we must speak with due allowance for the difference. For some purposes the image is as good as the original ; hence we get into a way of speaking of the two in the same terms, or as if there were no difference at all. For other purposes, the difference needs to be accentuated, instead of being slurred over. No theory of Association can be sound that mistakes the character of the mental reproduction, to which Sensation and Association jointly contribute.

Mr. Bradley's criticism of Association fastens on this part of the case. Freely allowing that there are facts corresponding to the two chief laws, he objects to the ways of stating these as absurd and self-contradictory. For example, as regards Contiguity, he says, "What was contiguous is now non-existent, and what is re-instated has *never* been contiguous". This comes of his putting an interpretation upon the meaning of re-instatement that nobody ever held, but which no doubt should be barred out by rigorous precision of language. So severe, indeed, is Mr. Bradley's view of re-instatement, that he will not allow a second view of the actual thing to be called re-instatement. If I look up to-night at a starry constellation, I might be weak enough to say that I was repeating an old impression to the letter. Mr. Bradley says No. I cannot repeat a yesterday's prospect ; yesterday has passed, and cannot be lived over again. To-day's experiences are to-day's, and these only.

I am not aware that any psychologist has guarded the statement of Association to this degree of nicety. I quite admit that there are circumstances that make it occasionally proper and desirable. Let me, therefore, learn from Mr. Bradley how to surmount the difficulty and fence the contradiction. He states the law of Contiguity thus:—"When elements have co-existed, they tend to be connected". And again—"Mental units which have co-existed cohere". Now this may be all very safe, but it has the defect of vagueness. To make it really useful there would be needed, first, some specification of the very general words 'element' and 'unit';

and, next, a more particular unfolding of the consequences of being 'connected' or 'cohering'. It is as if a chemist should say of combustion, that a red hot coal tends to become connected with the oxygen of the atmosphere.

Mr. Bradley's view of what rises up to the mind under Association is the embodiment of his Philosophy of the Real. It is, that *particulars* can never be associated, and that what is reproduced is *universal*. Now with his view of particularity (which is not shared in by anybody else that I know), this must be the case. A particular experience is the experience of one moment of time, and cannot be repeated in fact; for the 6th day of the month can never be the 5th. I quite agree with him that, in his sense, a single instance as such cannot be retained by the human intelligence. I further agree with him that seldom at any stage can a fact be retained without something that we may call mutilation, but the precise mutilation is a matter for inquiry. It may be a mutilation that gives generality or, if you prefer it, universality, but it may not operate in that way.

In common parlance, we should say that our knowledge of a concrete thing is improved by repetition, and attains its very best when we have viewed it times without number, so as to detach the picture from special dates and circumstances. This is the particularity of all our familiar surroundings; it does not make the objects general in any received sense of the word; they are still looked upon by us as particulars, and when we conceive them in idea, we do so with all the more vividness from the iteration and the absence of reference to special moments of observation.

Thus we seem to sacrifice an important distinction through Mr. Bradley's use of the words 'particular' and 'universal'. My memory or idea of a particular event contains the reference to the date or moment of occurrence, and to all the surroundings of the actual experience. The idea must still be shorn and mutilated; it cannot bring me back to the reality, and it must incur all the loss of imperfect mental cohesion. But it, nevertheless, presents itself as the image or residuum of a real event marked off by date and circumstances from every other event, and thus rendered individual. To call such a resuscitation 'universal' is a new employment of the word, and would lead to very inconvenient results. I take two examples to show how the term is commonly understood in science. One is 'universal gravitation,' where the meaning is the highest attainable generalisation of a natural power, the last of a succession of gradually ascending generalities. When we have generalised one step after

another, we call the final generality ' universal '. The second example is the controversy of Nominalism and Realism : called in the schools the theory of Universals. Here the universal is opposed at once to the concrete and particular, and gradation is not implied. But neither of those senses, at bottom the same, coincides with Mr. Bradley's 'universal'. The contrast of the Sensation and the Idea, the original concrete experience and the product formed by recalling that experience through association, is one of the most important contrasts in Psychology. For one reason already given, the particular and the universal does not express it ; while the attempt to employ these terms for the purpose would destroy their fitness for their more usual meanings, and especially for the meaning of singular and general. If I call my actual observation of the Dungeon Ghyll ' particular,' and my recollection of it ' universal,' I have no terms to express a waterfall in general, still less for terrestrial gravitation, least of all for universal gravitation.

Our difficulty then lies in this. An idea may be the idea of an absolute individual in all its clothing of individuality ; even when existing out of its time, and present only as a recollection, it retains its reference to the moment of its occurrence, and, so far as that goes, it is no less particular than the actual sensation was. Of the various attempts to express the real contrast, perhaps the most suitable are the metaphors ' original ' and ' copy,' ' sound ' and ' echo '. There is a propriety also in the word ' faded,' as opposed to fresh and first-hand. Something may be said for Mr. Bradley's ' mutilated ' reproduction, implying, as it does, a failure in the pristine accuracy of the lineaments. The defect of the term lies in suggesting distortion and loss of identity ; a preferable metaphor would be ' impoverished,' as showing, not distortion, but simply the inferiority in fulness of the picture to the original.

All this, however, implies that our examples are taken from the presentations of the higher series, as embracing the complexity of the outer world. No imagination can reproduce a visible scene in all the fulness of its lineaments, and in all the brightness of its illumination. But in the wide range of our acquisitions are to be found instances where we reproduce an original exactly, as in mechanical processes. I can learn the words of a language precisely as they are presented by my teacher ; I can copy him to the life : there is no loss whatever. Again, we often begin upon ideas, and couple these from the first. In point of fact, we must accommodate the description of the Idea to the cases.

Indeed without a detailed psychology of Association, I do not see how we can arrive at just definitions of the fundamental terms Impression, Sensation, Actuality, Reality, Presentation, Perception, Idea, Representation, Thought.

VII. What circumstances are proper to be included with Association as essential accompaniments of its work?

We cannot fully state the laws of Association without certain conditions of their operation, or certain co-operating influences of a non-intellectual kind. Both the Feelings and the Will play a part in the associating processes at every stage.

Thus, as to Contiguity. The rate of coherence of two impressions is known to depend partly on the intensity of the consciousness on the occasions when the two are in company, and partly on the endurance and repetition of the concurrence. Hamilton's law of Preference is simply the fact of conscious intensity due to special interest.

There are, as it were, two distinct moments to be studied in giving an account of the associating process. The first is the original placing of the elements together, and the supplying of the conditions requisite to their adhesion. The second is the consequent resuscitation, which, too, has its conditions, over and above the foregoing. An association between two elements may be to all intents and purposes sufficient for obtaining the revival of the second on the presentation of the first, yet the revival may not occur. The state of mind at the time may be either favourable or unfavourable to the recall of a past impression or idea; and the determining influence at work may be due to the feelings or to the will. Hence the theory of Association is not complete without specifying the accompanying conditions, both for the moment of primary adhesion and for the moment of associative recall.

The circumstances that give conscious intensity are not difficult to assign. The word 'Attention' in its commoner meaning,—as a voluntary prompting to concentration of mind, expresses a great deal, but not everything. There is concentration from mere excitement, painful and pleasurable, as distinguished from the attention under the will, although the two shade into one another.

All I am contending for just now is that, with the associating forces, we should include the emotional and volitional influences that are inseparable from their working and that must be taken account of according to their degree in each case. These forces do not of themselves make the Associa-

tion, any more than heat and light enable a plant to propagate its kind; they are but the essential accompaniments: without being the fact, they are conditions of its full realisation.

The concluding head will involve a more specific consideration of the present topic.

VIII. The final question of this paper relates to the insufficiency or shortcoming of the principles of Association, as now qualified, to explain the rise and succession of our thoughts, in other words, the various operations of the Intellect.

This leads me to examine the new position occupied by Prof. Wundt, who regards these principles as insufficient to account for the higher intellectual processes. Even if Prof. Wundt's name were not enough to secure a respectful consideration of his views, we have an additional motive, in the declaration of M. Lachelier, his expounder in the *Revue Philosophique*, that in France, at the present time, neither English empiricism nor pure Kantianism can give satisfaction, and that a reconciliation of the two is earnestly called for.

I leave it to the Kantians, old or new, to say how far Prof. Wundt's assumptions coincide with Kant's. I must endeavour to state what they are, and to criticise them, regarded as supplementary to the laws of association.

Wundt recognises in the mind two entirely distinct sets of laws—lower and higher. The lower are laws of the senses and the brain, and embrace sensations and intellectual groupings under ordinary association. They make up the department covered by the psychophysical researches of the German experimental psychologists.

The laws of Association, as prevailing in this lower region, are given by Wundt without any essential variation from the more usual renderings. His scheme is—

(1) Simultaneous Association.

- (*a*) Associative Synthesis.
- (*b*) Assimilation.
- (*c*) Complication.

(2) Successive Association.

While thus taking as his main distinction the Simultaneous and the Successive, Wundt admits as valid the reduction of the laws of Association (as by Herbart) to the two—Similarity and Contiguity; Contrast being a case of

association by Similarity under the influence of fluctuations of feeling.

As the course of associative reproduction is hindered by active attention and logical thinking, we must give ourselves up passively to the play of representations, if we wish to get persistent and coherent association. The flow of representations in dreaming and madness offers the best field of observation for the study of associations as such. In the ascending flood of ideas of the insane, we can sometimes follow step by step the process whereby logical thinking gradually undergoes dissolution by the increasing dominance of association. Hence the attempt to derive logical thinking from association is open to suspicion.

In Wundt's conception these laws are afflicted with the incurable disqualification of *passivity*, which restricts their unassisted workings to the lower forms of sensation and memory. Instead of pushing them to the explanation of the higher faculties of reasoning and imagination, as the English associationists profess to do, he considers it necessary to take an entirely new departure, to lay down a principle of Intellectual Activity, with laws of its own and a foundation of its own; locating it in a purely spiritual region of the mind, which has nothing in common with the physical constitution of the senses and the brain. This principle of activity he names Apperception, and thus expounds. In vision we are aware of the wide distinction between the central point of the retina and the surrounding portions stretching away to the circumference. It is in the centre that our visible discrimination reaches the utmost pitch of minuteness; hence to observe a given object thoroughly we turn upon it this visual centre. Such, says Wundt, is the difference between apperception and passive or listless consciousness. Apperception is thus nothing more than attention at the highest pitch of concentration; it is a thing of all degrees from bare consciousness up to the full strain of stimulated activity. Now as such activity is most usually an effort or effect of will, Apperception is another name for will applied to the operations of thought.

In mere association, apperception is not absent, but it is of a more primitive kind than in what is called distinctively the "apperceptive" combination of representations. The activity of apperception, in the lower association, is directly determined by the "psychical stimulus" of a representation, the frequency of its repetition, &c.; while, in the higher kind of apperceptive activity, there is an act of choice. Hence apperception is in the full sense volitional, and not

merely a kind of germ of volition. In apperceptive combination, however, association is still at work. The apperceptive activity makes use of the material furnished to it by association; but the laws of Association indicate only the possible combinations that are at the disposal of consciousness; what combination is actually carried out is decided by the act of apperception.

As direct sense-excitation furnishes consciousness with all its materials, so association preserves sense-impressions to be acted on by apperception. We may thus distinguish "passive apperception" (determined by stimuli, &c.) from "active apperception" (determined by an act of choice). It is this last alone that properly deserves the name. The laws of Association are most easily observed when apperception is passive; the laws of the apperceptive activity itself, when it is active. The distinction applies to successive as well as to simultaneous groupings of representations. *Memory* provides consciousness with materials by holding representations in an associative bond; *recollection* is the act of apperception that decides which of the associative representations shall actually come into the view-point of consciousness.

In following out the detailed illustration of the foregoing positions, Wundt presents us with a two-fold classification of thought-combinations—the *simultaneous* and the *successive*. Under the first falls the formation of concepts, which will suffice as an example of his proceeding. A concept, he says, is a single representation that stands in the place of a number of other representations of its kind; in other words, that is "apperceived" as standing for a whole class of representations. The formation of concepts is specially related to "assimilative" associations. Concepts do not result (as associationists have tried to show) from the dropping of all but the common elements in a number of representations, but from the voluntary selection of some specially striking element, which may not be common, or may not be characteristic. Thus the concept may be defined "according to its psychological origin," as "the completed fusion, through active apperception, of a ruling individual representation with a series of representations that belong together". Afterwards there occur the following additional changes—(1) obscuration of the representations bound up with the dominant element; (2) obscuration of the dominant element itself, and substitution of the spoken, together with the written, word.

It is under "*successive* thought-combinations" that pro-

positions or judgments are included ; the apperceptive movement being adapted to the difference of the case.

For the higher functions of intellect, then, the trains of association must come under the pressure of the will, as attention. The will can quicken up the associations into living power. By fastening the attention upon an object of thought, the assimilative force is quickened and resemblances more abundantly evoked ; the poet obtains his metaphors by severe concentration of mind upon the matter that he wishes to illustrate. So, imperfectly-formed bonds of contiguity may be rendered suggestive by means of intense application of thought to the present member of the couple ; as when we have forgotten someone's name, and keep cogitating on the image of the person till we recall it.

Besides thus intensifying the forces of association, beyond their natural power in the passive mood, the apperceptive concentration can modify and work up the trains of thought ; it can combine them for some purposes, and divide or analyse them for others. The processes of logic or reasoning, of imagination or art, of moral guidance, of working for ends, involve the double power of association proper and the control due to apperception. All these processes are copiously exemplified by Wundt in accordance with his main thesis.

And now, as apperception is another name for will working in the sphere of the intellectual trains, and as will supposes motives, the sources of apperception lie in the region of motives. But with Wundt, the motives of all our higher thinking transcend the sphere of the senses and the brain, the material organism and its functions. No doubt a certain class of motives is allied with this lower part of our being ; there are, of course, pleasures and pains of sense and appetite, and these pleasures and pains must be often operative as stimulants of attention, and must even intensify and control the trains of association. Nevertheless, all such motives are limited to the inferior and merely animal objects of thought and pursuit. They exemplify a sort of mechanical or physical correspondence between the intensity of the feeling and the intensity of the action, just as the pace or work of a steam-engine is related to the consumption of coal.

Apperception, on the other hand, does not follow the animal inclinations : it works under a class of altogether distinct and superior motives, regulated by laws peculiar to itself. These motives are the produce of heredity. They fall under three different classes—the logical, the æsthetic, the moral. They have their foundations in our imma-

terial soul, they possess nothing in common with the senses and laws of passive association, although the associating forces are their essential tool or instrument. The logical stimuli direct the forces to the production of reasoned truths, the æsthetic to art, and the ethical to right conduct. It is in this region alone that free-will possesses any meaning, There is a determinism in the lower region which is as mechanical as you please : the determinism of the higher or apperceptive region is a psychical determinism ; in it there is no constant relation between energy of motive and energy of action. The laws of apperception are thus very peculiar, and the mode of discovering them is peculiar. Ordinary introspection is unequal to the research. Without excluding this means of knowledge, we must devote ourselves to a study of man's history and institutions, which are the fruit of his highest elaborations, and the measure and test of his superior motives. Anthropology at large, comprising social progress, literature, language, mythology, religion, will furnish the laws of our highest motives, being the resultant of their operation during the ages that have passed.

Of the questions raised by the foregoing speculation, there are two that I must pass without discussion. The one is the immateriality of the mind in certain of its functions, a position maintained in all its nakedness, and without any attempt to get it out of the difficulties that were felt no less by Aristotle than by ourselves. How an immaterial mind can be allied with a material organism, which is the essential instrument of certain very important mental functions ; how the partition of functions is made ; how it is that there can be so much difference of opinion as to what is grounded in the material organs, and what subsists in the immaterial sphere, —all this is left without any palliation and need not be counterargued until something is done to surmount such obvious and weighty objections.

The other point is Free-will, which is presented in a somewhat novel shape. It has its exclusive *habitat* in the upper sphere, where the principle of proportionality of cause and effect is suspended, the smallest causes producing, if need be, the largest effects. Here too there are difficulties to be explained away. It would be requisite to adduce some unequivocal examples of this inversion of mechanical uniformity, as well as to show that in the great institutions of mankind, as society, language, religion, such inequality of cause and effect is unequivocally present. We are well acquainted, even in the mechanical sphere, with the occur-

rence of effects out of proportion to the reputed causes, as in exploding gunpowder, but we know that these are only apparent causes, and that when we get hold of the real causes, proportionality is rigorously maintained.

Passing those two questions, I propose to remark upon the bearing of Wundt's speculation upon the laws of Association properly so called. Notwithstanding the stress put upon the action of the will, he still allows that will is not everything: he does not shunt the associating links, and lay the whole stress of the exposition on the apperceptive volition. What he says as to the essential concurrence of emotion and will with the workings of association we fully admit. No associating link can be forged, in the first instance, except in the fire of consciousness; and the rapidity of the operation depends on the intensity of the glow. In like manner, the links thus forged are dormant and inactive, until some stimulus of consciousness is present, whether feeling or will. A man of scholarly attainments, with his hundred thousand linkings of contiguous bonds, will sit in his chair for hours, and bring up nothing: he need not be asleep the while; mere languor is enough to account for his intellectual quiescence.

It is with the original forming of the associating links, that education is most concerned; and the theory of education must enumerate all the circumstances that aid the process. These are partly physical, partly intellectual, partly emotional and volitional. To confine the statement to the factor of will alone, as attention, would be insufficient.

The subsequent rise or resuscitation of ideas consequent on association, is a fresh field of study. All the above-named influences are still at work, although in a somewhat different way. The practical applications are here wider. Besides the bearing on education, we have the wider consideration of the conduct and economy of the thinking powers. Over and above the original adhesion, there are circumstances that assist in the reproduction, and make it a success or a failure. Chief among these is the power of the will, but not to the exclusion of other influences. Even the addition of emotional excitement, which of itself accounts for a great deal, that is, apart from moving the will, is not all. The purely intellectual conditions, under which I include the number and nature of the associating connexions at work in a given case, bear a large part in the process of resuscitation.

More particularly, as to the influence of the will in apper-

ception, everything that Wundt advances is supported by our experience. The will may make up, in some small degree, for the feebleness of a contiguous linking, partly by a more strenuous attention, but far more by the search for collateral links in aid. It may likewise favour the recall of a resembling image. But neither of those two cases represents its habitual and all-powerful efficacy; in both, the limits of its reproductive force are still narrow. The operation that represents Wundt's Apperception in its full sweep is that crowning example of voluntary power—the command of the thoughts, by detaining some and dismissing others, as they arise, and are found suitable, or the contrary. Too much cannot be said as to the importance of voluntary attention in this lofty sphere. All thinking for an end,—whether it be practical or speculative, scientific or æsthetic,—consists in availing ourselves of the materials afforded by association, and choosing or rejecting according to the perceived fitness or unfitness for that end.

When, therefore, Wundt says that association alone does not explain the higher intellectual functions, he only says what we all admit, namely, that Association needs the control of will and feelings, in order to bring forth our more important thinking products. In the absence of some degree of conscious intensity, association can no more unite ideas, or restore the past by virtue of such unions, than a complete set of water-pipes can distribute water without a full reservoir to draw from. The scheme of Wundt does not lead to the slighting of Association as a great intellectual factor. His Apperception would be nothing without it.

The point where my disagreement with the whole speculation now adduced begins, is the drawing of a hard and fast line between the lower and the higher workings of Association. To me the word Apperception, as employed by Wundt, is unnecessary and unmeaning. All that it is intended to convey is much better expressed by our old phraseology. If it is another name for the voluntary control of the thoughts it is superfluous and therefore mischievous. It leads us to suppose that there must be some distinct meaning to correspond, and we find there is no such meaning. There is an important line between the random course of the thoughts, —in reverie, in dreaming, in insanity, and even in the sane when they give way to casual associating that has no end— and the regulated thinking of a well-trained mind; but this line can be drawn much better by our old familiar phraseology than by the new coinage, as proposed by Professor Wundt.

A far more serious ground of difference of opinion is the

treatment of Association, as almost exclusively an affair of motives. This point of view is not special to Wundt. It is set forth with great clearness in the following passage in Professor Adamson's review of Mr. Sully's *Psychology*, in MIND ix. 438.

"Each separate fact of conscious experience stands out momentarily from the vast complex of the individual mind, and, as one says, receives so much attention, but it is always accompanied by this complex, and the question, what determines the train of thought, what causes us, as we say, to think of something else, is really the question what causes attention to include this or that at the moment. The motives are infinitely numerous, and vary indefinitely in character in successive stages of individual development; for the most part, indeed, they are distinctly what would be described as logical; but the essential fact is the movement of attention as expressed in the view taken of the part more immediately under consideration."

That the motives to attention are an important part of the course of thought, I freely admit. But to call these motives infinitely numerous seems to me an exaggeration that passes the limits of a figure. If the human mind possessed any constituent fairly describable as infinitely numerous, it would, as a study, be entirely beyond our limited capacity. But our motives, for all purposes whatever, are anything but infinite in number; while those that operate in directing the current of thought are only a fraction of the whole. Nay more. Whatever be the total of such motives, their mode of operating reduces itself to a few understood particulars, which have been already adverted to in the course of this discussion.

If there be any part of the mind open to the description of being "infinitely numerous" in details, it is Association in its characteristic feature of linking mental elements together. We can count, in a rough way, the names of a language; and using the estimate as a datum, we can prove beyond dispute that the distinguishable links of associated particulars in the mind of an educated man must greatly exceed one hundred thousand. I doubt if the most liberal calculation of motives would furnish one-hundredth of this number.

Let us consider the actual case of the acquisition of a language, with its thousands of couplings of words and phrases, and consider how much motives have to do with it. In the first place, what number of motives are at work first and last? I imagine they could be easily counted up, whatever way we may look at them. The wish to open up a new avenue to

information and interest is of itself comprehensive enough: we could not multiply motives without putting down, as distinct items, every occasion when we desired to learn something or to talk with somebody. But Psychology would never condescend to such particulars as this: it would serve no end. During the whole dreary process of mastering a foreign tongue, we are aware of only one or two recurring motives; while we are painfully conversant with the steps of the associating process, by which we add one group after another, to our adhesions of name with name. Our interest lies in quickening this process by every known means—motives included. The motives make one and only one condition: they are the same throughout. The common devices for promoting the requisite adhesions are not stated in terms of the motives, but in terms of the laws of association. A certain force of attention is required, and this comes under motive; but there is a further regulation of the manner of presenting the names and objects to be united. The professors of artificial memory work not by motives, but by a skilful manipulation of the matters to be recollected. The topical memory of the ancients did not depend on motives.

What I apprehend is meant by the infinity of our motives, is the sum-total of all the *applications* that we make of our resources as made up by association. These applications are of course very numerous, but they admit of classification under a limited number of heads—as simple memory, perception, reasoning (in all its various phases), imagination and, Wundt would add, conduct. I do not doubt that association might be described under these various kinds of intellectual working; but I think a great deal would be lost, and nothing gained, by regarding simply the outcome of the associating processes, and saying nothing of the immense fabric that has to be reared before there can be any outcome. We should trace out, in detail, both supply and demand in our intellectual work. I have not yet discovered any better method of expounding the laws of Association than by combining two arrangements: first, the systematic view of mental elements, as they become associated together; and second, the applications of these products to our various utilities.

II.—THE PERCEPTION OF SPACE. (II.)[1]

By Professor William James.

3. *The Synthesis of the original sensible Bignesses.*

In previous sections I sought to show that the primitive experience, which lies at the bottom of our knowledge of space, is the quality of bigness or extensiveness which all of our sensations possess.[2] I showed, moreover, that if an original sensation of extent were subdivided into parts by discriminative attention, these parts must come to be perceived, through processes of association, in definite relations of mutual position and order. I said nothing, however, of the combination of one sensible space-total with another, the inquiry to which we must now turn.

It breaks into two subordinate problems: (1) *How is the subdivision and measurement of the several sensorial spaces completely effected?* and (2) *How do their mutual addition and fusion and reduction to the same scale, in a word, how does their synthesis, occur?* I think that, as in the investigation just finished, we found ourselves able to get along without invoking any data but those that pure sensibility on the one hand, and the ordinary intellectual powers of discrimination and recollection on the other, were able to yield; so here we shall emerge from our more complicated quest with the conviction that all the facts can be accounted for on the supposition that no other mental forces have been at work save those we find everywhere else in psychology; sensibility, namely, for the data, and discrimination, association, memory and choice, for the rearrangements and combinations they undergo.

[1] Continued from Mind No. 45.

[2] *Consensus* is such a precious thing in the present state of psychology, that I cannot refrain from reminding the reader that in this, the fundamental and indispensable, part of my thesis, I have an ally in Mr. James Ward, whose article "Psychology" in the edition still publishing of the *Encyclopædia Britannica*, seems to me, on the whole, the deepest and subtlest collective view of the subject which has appeared in any language. *Extensity* is Mr. Ward's name (see pp. 46, 53, of the article) for this primitive quality of sensation, out of which our several perceptions of *extension* grow.

(*a*) *Their Subdivision.*

Let us take subdivision first. How are spatial subdivisions brought to consciousness? in other words, How does spatial discrimination occur? I must reserve a general treatment of the subject of discrimination for another place. Here we need only inquire what are the conditions that make spatial discrimination so much finer in sight than in touch, and in touch than in hearing, smell or taste.

The first great condition is, that different points of the surface shall differ in the quality of their immanent sensibility, that is, that each shall carry its special local-sign. If the skin felt everywhere exactly alike, a foot-bath could be distinguished from a total immersion, as being smaller, but never distinguished from a wet face. The local-signs are indispensable; two points which have the same local-sign will always be felt as the same point.[1] We do not judge them two unless we have discerned their sensations to be different. Granted none but homogeneous irritants, that organ would then distinguish the greatest multiplicity of irritants—would count most stars or compass-points, or best compare the size of two wet surfaces—whose local sensibility was the least even. A skin whose sensibility shaded rapidly off from a focus, like the apex of a boil, would be better than a homogeneous integument for spatial perception. The retina, with its exquisitely sensitive fovea, has this peculiarity, and undoubtedly owes to it a great part of the minuteness with which we are able to subdivide the total bigness of the sensation it yields. On its periphery the local differences do not shade off very rapidly, and we can count their fewer subdivisions.

But these local differences of feeling, *so long as the surface is unexcited from without,* are almost *null.* I cannot feel them by a pure mental act of attention unless they belong to quite distinct parts of the body, as the nose and the lip, the finger-tip and the ear; their contrast needs the reinforcement of outward excitement to be felt. In the spatial muchness of a colic—or, to call it by the more spacious-sounding vernacular, of a 'bellyache'—I can with difficulty distinguish the north-east from the south-west corner, but can do so much more easily if, by pressing my finger against the

[1] A. Binet (*Revue Philosophique*, Sept., 1880, page 291) says we judge them locally different as soon as their sensations differ enough for us to distinguish them as qualitatively different when successively excited. This is not strictly true. Skin-sensations, different enough to be discriminated when *successive*, may still fuse locally if excited both at once.

former region, I am able to make the pain there more intense.

The local differences require then an adventitious sensation, superinduced upon them, to awaken the attention. After the attention has once been awakened in this way, it may continue to be conscious of the unaided difference; just as a sail on the horizon may be too faint for us to notice until someone's finger, placed against the spot, has pointed it out to us, but may then remain visible after the finger has been withdrawn. But all this is true only on condition that separate points of the surface may be *exclusively* stimulated. If the whole surface at once be excited from without, and homogeneously, as, for example, by immersing the body in salt water, local discrimination is not furthered. The local-signs, it is true, all awaken at once; but in such multitude that no one of them, with its specific quality, stands out in contrast with the rest. If, however, a single extremity be immersed, the contrast between the wet and dry parts is strong, and, at the surface of the water especially, the local-signs attract the attention, giving the feeling of a ring surrounding the member. Similarly, two or three wet spots separated by dry spots, or two or three hard points against the skin, will help to break up our consciousness of the latter's bigness. In cases of this sort, where points receiving an identical kind of excitement are, nevertheless, felt to be locally distinct, and the objective irritants are also judged multiple,—*e.g.*, compass-points on skin or stars on retina,—the ordinary explanation is no doubt just, and we judge the outward causes to be multiple because we have discerned the local feelings of their sensations to be different.

Capacity for partial stimulation is, then, the second condition favouring discrimination. A sensitive surface which has to be excited in all its parts at once by every kind of stimulus that can be applied to it can yield nothing but a sense of undivided largeness. This appears to be the case with the olfactory, and to all intents and purposes with the gustatory, surfaces. Of many tastes and flavours, even simultaneously presented, each affects the totality of its respective organ, each appears with the whole vastness given by that organ, and appears interpenetrated by the rest.[1]

[1] It may, however, be said that even in the tongue there is a determination of bitter flavours to the back, and of acids to the front, edge of the organ. Spices likewise affect its sides and front, and a taste like that of alum localises itself, by its styptic effect on the portion of mucous membrane, which it immediately touches, more sharply than roast pork, for

I should have been willing some years ago to name without hesitation a third condition of discrimination—saying it would be most developed in that organ which is susceptible of the *most various qualities* of feeling. The retina is unquestionably such an organ. The colours and shades it perceives are infinitely more numerous than the diversities of skin-sensation. And it can feel at once white and black, whilst the ear can in nowise so feel sound and silence. But the late researches of Donaldson and Hall,[1] Blix and Goldscheider, on specific points for heat, cold, pressure and pain in the skin; the older ones of Czermak (repeated later in Wundt's laboratory), showing that a hot and a cold compass-point are no more easily discriminated as two than two of equal temperature; and some unpublished experiments of my own—all disincline me to make much of this condition

example, which stimulates all parts alike. The pork, therefore, tastes more spacious than the alum or the pepper. In the nose, too, certain smells, of which vinegar may be taken as the type, seem less spatially extended than heavy, suffocating odours, like musk. The reason of this appears to be that the former inhibit inspiration by their sharpness, whilst the latter are drawn into the lungs, and thus excite an objectively larger surface. The ascription of height and depth to certain notes seems due, not to any localisation of the sounds, but to the fact that a feeling of vibration in the chest and tension in the gullet accompanies the singing of a bass note, whilst, when we sing high, the palatine mucous membrane is drawn upon by the muscles which move the larynx, and awakens a feeling in the roof of the mouth.

The only real objection to the law of partial stimulation laid down in the text is one that might be drawn from the organ of hearing; for, according to modern theories, the cochlea may have its separate nerve-termini exclusively excited by sounds of differing pitch, and yet the sounds seem all to fill a common space, and not necessarily to be arranged alongside of each other. At most the high note is felt as a thinner, brighter streak against a darker background. In an article on Space, published in the *Journal of Speculative Philosophy* for January, 1879, I ventured to suggest that possibly the auditory nerve-termini might be "excited all at once by sounds of any pitch, as the whole retina would be by every luminous point if there were no dioptric apparatus affixed". And I added: "Notwithstanding the brilliant conjectures of the last few years which assign different acoustic end-organs to different rates of air-wave, we are still greatly in the dark about the subject; and I, for my part, would much more confidently reject a theory of hearing which violated the principles advanced in this article than give up those principles for the sake of any hypothesis hitherto published about either organs of Corti or basilar membrane". Professor Rutherford's theory of hearing, advanced at the last meeting of the British Association, already furnishes an alternative view which would make hearing present no exception to the space-theory I defend, and which, whether destined to be proved true or false, ought, at any rate, to make us feel that the Helmholtzian theory is probably not the last word in the physiology of hearing.

[1] See MIND x. 399 and 577.

now.[1] There is, however, one quality of sensation which is particularly exciting, and that is the *feeling of motion over any of our surfaces.* The erection of this into a separate elementary quality of sensibility is one of the most recent of psychological achievements, and is worthy of detaining us a while at this point.

Psychologists generally have assumed the perception of motion to be impossible until the positions of *terminus a quo* and *terminus ad quem* are severally cognised, and their successive occupancies by the moving body are perceived to be separated by a distinct interval of time.[2] As a matter of fact, however, we cognise only the very slowest motions in this way. Seeing the hand of a clock at XII. and afterwards at VI., we judge that it has moved through the interval. Seeing the sun now in the east and again in the west, I infer it to have passed over my head. But we can only *infer* that which we already generically know in some more direct fashion, and it is experimentally certain that we have the feeling of motion given us as a direct and simple *sensation.* Czermak long ago pointed out the difference between seeing the motion of the second-hand of a watch, when we look directly at it, and noticing the fact of its having altered its position when we fix our gaze upon some other point of the dial-plate. In the first case we have a specific quality of sensation which is absent in the second. If the reader will find a portion of his skin—the arm, for example—where a pair of compass-points an inch apart are felt as one impression, and if he will then trace lines a tenth of an inch long

[1] I tried on nine or ten people, making numerous observations on each, what difference it made in the discrimination of two points to have them alike or unlike. The points chosen were (1) two large needle-heads, (2) two screw-heads, and (3) a needle-head and a screw-head. The distance of the screw-heads was measured from their centres. I found that when the points gave diverse qualities of feeling (as in 3), this facilitated the discrimination, but much less strongly than I expected. The difference, in fact, would often not be perceptible twenty times running. When, however, one of the points was endowed with a rotary movement, the other remaining still, the doubleness of the points was much more evident. To observe this I took an ordinary compass with one point blunt, and the movable leg replaced by a metallic rod which could, at any moment, be made to rotate *in situ* by a dentist's drilling machine, to which it was attached. The compass had then its points applied to the skin at such a distance apart as to be felt as one impression. Suddenly rotating the drill-apparatus then almost always made them seem as two.

[2] This is only one example of what I have called 'the psychologist's fallacy'—thinking that the mind he is studying must necessarily be conscious of the object after the fashion in which the psychologist himself is conscious of it.

on that spot with a pencil point, he will be distinctly aware of the point's motion and vaguely aware of the direction of the motion. The perception of the motion here is certainly not derived from a pre-existing knowledge that its starting and ending points are separate positions in space, because positions in space ten times wider apart fail to be discriminated as such when excited by the dividers. It is the same with the retina. One's fingers when cast upon its peripheral portions cannot be counted—that is to say, the five retinal tracts which they occupy are not distinctly apprehended by the mind as five separate positions in space—and yet the slightest movement of the fingers is most vividly perceived as movement and nothing else. It is thus certain that our sense of movement, being so much more delicate than our sense of position, cannot possibly be derived from it. A curious observation by Exner[1] completes the proof that movement is a primitive form of sensibility, by showing it to be much more delicate than our sense of succession in time. This very able physiologist caused two electric sparks to appear in rapid succession, one beside the other. The observer had to state whether the right-hand one or the left-hand one appeared first. When the interval was reduced to as short a time as 0·044″ the discrimination of temporal order in the sparks became impossible. But Exner found that if the sparks were brought so close together in space that their irradiation-circles overlapped, the eye then felt their flashing as if it were the motion of a single spark from the point occupied by the first to the point occupied by the second, and the time-interval might then be made as small as 0·015″ before the mind began to be in doubt as to whether the apparent motion started from the right or left. On the skin similar experiments gave similar results.

Vierordt, at almost the same time,[2] called attention to certain persistent illusions which seemed to him survivals from a stage of development when motion was felt as such, but not yet discriminated as belonging to subject or object. Such feeling, he concluded, must be the primitive and undifferentiated form of all spatial perception. The illusions in question are, among others, these: If another person gently trace a line across our wrist or finger, the latter being stationary, it will feel to us as if the member were moving in the opposite direction to the tracing point. If, on the contrary, we move our limb across a fixed point, it will be seen as if

[1] *Sitzb. der. k. Akad. zu Wien*, Bd. lxxii., Abth. 3 (1875).

[2] *Zeitschrift für Biologie*, xii. 226 (1876).

the point were moving as well. If the reader will touch his forehead with his forefinger kept motionless, and then rotate the head so that the skin of the forehead passes beneath the finger's tip, he will have an irresistible sensation of the latter being itself in motion in the opposite direction to the head. So in abducting the fingers from each other; some may move and the rest be still, but the still ones will feel as if they were actively separating from the rest. Vierordt's inferences may be rash, but his experiments certainly show to one who will repeat them how much more like an indecomposable *sensation* our perception of motion is, than like a constructive act of the mind.

But the most valuable contribution to the subject is the paper of G. H. Schneider,[1] who takes up the matter zoologically, and shows by examples from every branch of the animal kingdom that movement is the quality by which animals most easily attract each other's attention. The instinct of 'shamming death' is no shamming of death at all, but rather a paralysis through fear, which saves the insect, crustacean or other creature from being *noticed at all* by his enemy. It is paralleled in the human race by the breath-holding stillness of the boy playing 'I spy,' to whom the seeker is near; and its obverse side is shown in our involuntary waving of arms, jumping up and down, and so forth, when we wish to attract someone's attention at a distance. Creatures 'stalking' their prey and creatures hiding from their pursuers alike show how immobility diminishes conspicuity. In the woods, if we are quiet, the squirrels and birds will actually touch us. Flies will light on stuffed birds and stationary frogs.[2] On the other hand, the tremendous shock of feeling the thing we are sitting on begin to move, the exaggerated start it gives us to have an insect unexpectedly pass over our skin or a cat noiselessly come and snuffle about our hand, the excessive reflex effects of tickling, &c., show how exciting the sensation of motion is *per se*. A kitten cannot help pursuing a moving ball. Impressions too faint to be cognised at all are immediately felt if they move. A fly sitting is unnoticed,—we feel it the moment it crawls. A shadow may be too faint to be perceived. As soon as it moves, however, we see it. Schneider found that a shadow, with distinct outline, and directly fixated, could still be perceived when moving, although its objective

[1] *Vierteljahrssch. für wiss. Philos.*, ii. 377.

[2] Exner tries to show that the structure of the faceted eye of articulates adapts it for perceiving motions almost exclusively.

strength might be but half as great as that of a stationary shadow so faint as just to disappear. With a blurred shadow in indirect vision the difference in favour of motion was much greater—namely, 13·3 : 40·7. If we hold a finger between our closed eyelid and the sunshine we shall not notice its presence. The moment we move it to and fro, however, we discern it. Such visual perception as this reproduces the conditions of sight among the radiates.

Enough has now been said to show that in the education of spatial discrimination the motions of impressions across sensory surfaces must have been the principal agent in breaking up our consciousness of the surfaces into a consciousness of their parts. Even to-day the principal function of the peripheral regions of our retina is that of sentinels, which, when beams of light move over them, cry 'Who goes there?' and call the fovea to the spot. Most parts of the skin do but perform the same office for the finger-tips. Of course finger-tips and fovea leave *some* power of direct perception to marginal retina and skin respectively. But it is worthy of note that such perception is best developed on the skin of the most movable parts (the labours of Vierordt and his pupils have well shown this); and that in the blind, whose skin is exceptionally discriminative, it seems to have become so through the inveterate habit they possess of twitching and moving it under whatever object may touch them, so as to become better acquainted with the conformity of the latter. Czermak was the first to notice this. It may be easily verified. Of course movement of surface under object is, for purposes of stimulation, equivalent to movement of object over surface. And the exquisite mobility of the eyeball is thus shown, apart from those measuring uses we have noticed already and shall notice again, to be of immense service in promoting discrimination pure and simple.

(*b*) *Their Comparison and Measurement.*

What precedes is all we can say in answer to the problem of discrimination. Turn now to that of *measurement of the several spaces against each other*, that being the first step in our constructing out of our diverse space-experiences the one space we believe in as that of the real world.

If we were immovable and could only passively receive the pressure and motion of objects on our skin, without ever feeling one part of our skin with another, it is certain that we should have far vaguer perceptions of their extension and of our own form than we now possess. The differences of

vastness in the feelings of different parts would have uncorrected play. Objects gliding from one part of our surface to another would appear to change their size, as in the observations mentioned at the beginning of the paper; and we should have no certainty as to how much lip was equivalent to so much forehead, how much finger to so much back.

But with the power of exploring one part of the surface by another we get a direct perception of cutaneous equivalencies. The primitive differences of vastness are overpowered when we feel by an immediate sensation that a certain length of thigh-surface is in contact with the entire palm and fingers. And when a certain motion of the opposite finger-tips draws a line first along this same length of thigh and then along the whole of the hand in question, we get a new manner of measurement, less direct but confirming the equivalencies established by the first. In these ways, by superpositions of parts and by tracing lines on different parts by identical movements, a person deprived of sight can soon learn to reduce all the dimensions of his body to a homogeneous scale. By applying the same methods to objects of his own size or smaller, he can with equal ease make himself acquainted with their extension stated in terms derived from his own bulk, palms, feet, cubits, spans, paces, fathoms (arm-spreads), &c. In these reductions it is to be noticed that *when the resident sensations of largeness of two opposed surfaces conflict, one of the sensations is chosen as the true standard and the other treated as illusory.* Thus an empty tooth-socket is believed to *be* really smaller than the finger-tip which it will not admit, although it may *feel* larger; and in general it may be said that the hand, as the almost exclusive organ of palpation, gives its own magnitude to the other parts, instead of having its size determined by them.

The readjustment of the various retinal space-feelings to a common scale is more complex still. So constantly is the same qualitative impression of colour and form changing its magnitude upon the retina (whilst from incessant reversals of the change and tactile verifications we believe the real size of the object to be unaltered), that we end by ascribing no absolute import whatever to the retinal space-feeling which at any moment we may receive. So complete does this overlooking of retinal magnitude become, that it is next to impossible to compare the visual magnitude subtended by different objects at different distances, without making the experiment of superposition. We cannot say beforehand how much of a distant house or tree our finger will cover. The various answers to the familiar question, How large is

the moon ?—answers which vary from a cartwheel to a wafer—illustrate this most strikingly. The hardest part of the training of a young draughtsman is his learning to feel directly the relative angular or retinal magnitudes which different parts of the field of view subtend. To do this he must recover what Ruskin calls the " innocence of the eye"—that is, a sort of childish perception of flat stains of colour merely as such, without consciousness of what they signify.

With the rest of us this innocence is lost. Out of all the visual magnitudes of each known object we have selected one as the real one to think of, and degraded all the others to serve as its signs. This ' real ' magnitude is determined by æsthetic and practical interests. It is that which we get when the object is at the distance most propitious for exact visual discrimination of its details. This is the distance at which we hold anything we are examining. Farther than this we see it too small, nearer too large. And the larger and the smaller feeling vanish in the act of suggesting this one, their more important *meaning*. As I look along the dining-table I overlook the fact that the farther plates and glasses *feel* so much smaller than my own, for I *know* that they are all equal in size, and the feeling, which is a present sensation, is eclipsed in the glare of the knowledge, which is a merely imagined one.

If the inconsistencies of sight-spaces *inter se* can thus be reduced, of course there can be no difficulty in equating sight-spaces with spaces given to touch. In this equation, it is the touch-feeling which prevails as real and the sight which serves as sign—a relation made necessary not only by the far greater constancy of felt over seen magnitudes, but by the greater practical interest which the sense of touch possesses for our lives. As a rule, things only benefit or harm us by coming into direct contact with our skin : sight is, in Mr. Spencer's phrase, only a sort of anticipatory touch, the latter is the " mother-tongue of thought," and the hand-maid's idiom must be translated into the language of the mistress before it can speak to the mind.

Later on we shall see that the feelings excited in the joints when a limb moves, are used as signs of the path traversed by the extremity. We seem to have in these joint-feelings instances of space-feelings, small *in se*, but geometrically similar to larger ones, preserving their form but suggesting the magnified scale of other sensations with which they are identified. But of this more anon. As for the equating of sound-, smell- and taste-volumes with those yielded by the more discriminative senses, they are too vague to need any

remark. It may be observed of pain, however, that its size has to be reduced to that of the normal tactile size of the organ which is its seat. A finger with a felon on it, and the pulses of the arteries therein, both 'feel' larger than we believe they really 'are'.

It will have been noticed in the account given that when two sensorial space-impressions, believed to come from the same object, differ, *then the one most interesting, practically or æsthetically, is judged to be the true one.* This law of interest holds throughout—though a permanent interest, like that of touch, may resist a strong but fleeting one like that of pain, as in the case just given of the felon.

(c) *Their Identification and Summation.*

Now for the next step in our construction of real space: *How are the various sense-spaces added together into a consolidated and unitary continuum?* For they are, in man at all events, incoherent at the start.

When a dentist is excavating a small cavity in one of our teeth we feel the hard point of his instrument scraping, in various distinctly differing directions, a surface which seems to our sensibility immensely larger than the subsequent use of the mirror tells us it really is. And though the directions of the scraping differ so completely *inter se*, not one of them can be identified with the particular direction in the outer world to which it corresponds. The space of the tooth-sensibility forms thus a little world by itself, which can only become congruent with the real space-world by further experiences which shall alter its bulk, identify its directions, fuse its margins, and finally imbed it as a definite part within a definite whole. Even though every joint's rotations should be felt to vary *inter se* as so many differences of direction in a common room; even though the same were true of diverse tracings on the skin, and of diverse tracings on the retina respectively, it would still not follow that feelings of direction, on these different surfaces, are intuitively comparable among each other, or with the other directions yielded by the feelings of the semi-circular canals. It would not follow that we should immediately judge them all to subdivide a common and single objective space-world.

If with the arms in an unnatural attitude we 'feel' things, we are perplexed about their shape, size and position. Let the reader lie on his back with his arms stretched above his head, and it will astonish him to find how ill able he is to recognise the geometrical relations of objects placed within

reach of his hands. But the geometrical relations here spoken of are nothing but identities recognised between the directions and sizes perceived in this way and those of our ordinary space-world. The two worlds do not fit each other intuitively.

How lax the connexion between the system of visual and the system of tactile directions is in man, appears from the facility with which microscopists learn to reverse the movements of their hand in manipulating things on the stage of the instrument. To move the slide to the *seen* left they must draw it to the *felt* right. But in a very few days the habit becomes a second nature. So in tying our cravat, shaving before a mirror, &c., the right and left sides are inverted and the directions of our hand movements are the opposite of what they seem. Yet this never annoys us. Only when by accident we try to tie the cravat of another person do we learn that there are two ways of combining sight and touch perceptions. Let any one try for the first time to write or draw while looking at the image of his hand and paper in a mirror, and he will be utterly bewildered. But a very short training will teach him to undo in this respect the associations of his previous lifetime.

Prisms show this in an even more striking way. If the eyes be armed with spectacles containing slightly prismatic glasses with their bases turned, for example, towards the right, every object looked at will be apparently translocated to the left ; and the hand put forth to grasp any such object will make the mistake of passing beyond it on the left side. But less than an hour of practice in wearing such spectacles rectifies the judgment so that no more mistakes are made. In fact the new-formed associations are already so strong that when the prisms are first laid aside again the opposite error is committed, the habits of a lifetime violated, and the hand now passed to the right of every object it seeks to touch.[1]

[1] It might, indeed, seem incredible that life-long association should be so rapidly undone. Were there any truth at all in the prevalent modern doctrine that ancestral habits engender fixed instincts in the progeny, one would say that the connexion with each other of the space-directions given by different senses ought to be congenital, inseparable and unconquerable. The facts cited might be taken to show that this modern doctrine, however it may be verified for lower forms, fails in its application to man. It must be remembered, however, that the association of particular body-movement directions with particular visual directions is not so constant as the objection assumes, even in creatures ignorant of mirrors, prisms and lenses. Every time we move one end of a lever towards the right we see the other end move towards the left. Every time we pull down a rope or

The incoherence of the different primordial sense-spaces *inter se* is often made a pretext for denying to the primitive bodily feelings any spatial quality at all. Nothing is commoner than to hear it said: "Babies have originally no spatial perception; for when a baby's toe aches it does not place the pain in the toe". But this is all wrong. The ache *is* a space; and it will be located within whatever movement-space may call it forth, or whatever pressure-space, heat-space or what not, may envelop it. What happens is, that *the baby does not place his toe in the pain;* for he knows nothing of his toe as yet. He has not attended to it as a visual object; he has not handled it with his fingers; nor have its normal organic sensations or contacts yet become interesting enough to be discriminated from the whole massive feeling of the foot, or even of the leg to which it belongs. In short, the toe is neither a member of the babe's optical space, of his hand-movement space, nor of his leg-and-foot space. It has actually no mental existence but as this little pain-space. What wonder then if the pain seem a little space-world all by itself?[1]

But let the pain once associate itself with these other space-worlds, and its space will become part of their space. Let the baby feel the nurse stroking the limb and awakening the pain every time her finger passes towards the toe; let him look on and see her finger on the toe every time the pain shoots up; let him handle his foot himself and get the pain whenever the toe comes into his grasp; let heating the whole foot or moving the leg exacerbate the pain; and all is changed. The space of the pain becomes identified with that part of each of the other spaces which is being felt when it awakens; and by their identity with it these parts are identified with each other, and their totals grow systematically connected.

The general principles of the baby's action in all this have now to be examined. As we found a little while ago that the different seen magnitudes are reduced to repre-

vine hanging over a tree branch, the other end of it is seen to rise. And thus even in infra-human creatures a certain indeterminateness of connexion between visual and tactile directions of movement may be kept up. The topic is one which might repay evolutionist philosophers for more minute study.

[1] Surgical operations on babies sometimes reveal an almost incredible incoherence among their earliest bodily feelings. There is lacking in them that system of pre-organised reflex "movements of defence" which in lower creatures carry the mouth or the foot straight to the part attacked. A baby may be vaccinated without being held.

sentatives of one real one, through the intermediation of an *object* judged to be the same in all, so we shall now find that the continuity and identity of the different sense-spaces rest on the same *objective judgment*. This is what gives order to the chaos.

Any group of different feelings always experienced (or at will to be experienced) together, are simplified by the mind's holding them for so many attributes or aspects of the same outer reality—which reality is always held to be represented by one of them more truly and essentially than by the rest. Space-feelings follow this law. *If two or more sensible spaces always do or always may occur at the same time or vary concomitantly, we take them for two modes of appearance of the same real space. That one whose content is most interesting is judged to be the truest representative of this, the others become its mere associates, properties or signs.*[1]

Thus, when a baby looks at its own moving hand, its retina gets a certain movement-feeling whilst its hand and arm become the seat of another movement-feeling. The baby holds the two movements to occupy the same space. The result is that the arm-space, more interesting than the retinal space by reason of the important skin-sensations to which it may lead, and therefore judged more real, is equated with a certain part of the retinal space, which, in becoming its sign, fixes to a certain extent the absolute space-values of the rest of the retinal field.

Suppose the baby learning to locate the pain of a blister in his toe by exploring his leg with his finger-tip and feeling the pain shoot up sharply the instant the blister is touched. The experiment gives him four different kinds of sensation—two of them protracted, two sudden. The first pair are the movement-feeling in the joints of the upper limb, and the movement-feeling on the skin of the leg and foot. These, as concomitantly experienced, are identified in their totalities as appearances of one objective space—the hand is judged to move through the same space in which the leg lies. The second pair are the pain in the blister, and the peculiar feeling the blister gives to the finger. Both these can be reproduced at will by repeating the movement—their spaces also fuse ; and as each marks the end of a peculiar movement-series (arm moved, leg stroked), the movement-spaces are *emphatically* identified with each other at *that* end. Were there other small blisters distributed down the leg, there would be a number of these emphatic points ; the movement-

[1] Cp. Lipps on "Complication," *Grundtatsachen des Seelenlebens*, p. 579.

spaces would be identified, not only as totals, but point for point. And the emphatic sensations that may momentarily occur imbedded in larger space-feelings not only play a part in conferring the maximum of reality upon those spaces that contain them, but they are the means of adding together spaces which can only be experienced in succession.

If, wandering through the woods to-day by a new path, I find myself suddenly in a glade which affects my senses exactly as did another I reached last week at the end of a different walk, I believe the two identical affections to present the same persisting glade, and infer that I have attained it by two differing roads. The spaces walked over grow congruent by their extremities; though apart from the one sensation those extremities give me, I should be under no necessity of connecting one walk with another at all. Now, the case in no whit differs when shorter movements are concerned. If, moving first one arm and then another, a blind child gets the same kind of sensation upon the hand, and gets it again as often as he repeats either process, he judges that he has touched the same object by both motions, and concludes that the motions terminate in a common place.

From place to place marked in this way he moves, and adding the places moved through, one to another, he builds up his notion of the extent of the outer world. The seeing man's process is identical; only his units, which may be successive bird's-eye views, are much larger.

But the emphatic sensations that may interrupt a feeling of movement perform another function still. They lend their own scale of absolute magnitude to the movement. That part of the movement-feeling with which they coincide is equated in extent with them, they being more interesting than it. But as the magnitude of this part of the movement-feeling is *immediately* comparable in a more or less exact way with that of its remaining parts, the whole of the movement-space becomes measured in terms of the adventitious feeling in question.

(*d*) *Muscle-feelings* versus *Joint-feelings.*

The applications of this last principle are best seen in the Feelings of Movement which arise in *joints*. These feelings have been too much neglected hitherto, and in entering now somewhat minutely into their study I shall probably at the same time freshen the interest of the reader, which under the rather dry abstractions of the previous pages may presumably have flagged.

When, by simply flexing my right forefinger on its metacarpal joint, I trace with its tip an inch on the palm of my left hand, is my feeling of the size of the inch purely and simply a feeling in the skin of the palm, or have the muscular contractions of the right hand and forearm anything to do with it? In the preceding pages I have constantly assumed spatial sensibility to be an affair of surfaces. At first starting, the consideration of the "muscular sense" as a space-measurer was postponed to a later stage. Many writers, of whom the foremost was Thomas Brown, in his *Lectures on the Philosophy of the Human Mind*, and of whom the latest is no less a psychologist than Prof. Delbœuf of Liège, hold that the consciousness of active muscular motion, aware of its own amount, is the *fons et origo* of all spatial measurement. It would seem to follow, if this theory were true, that two skin-feelings, one of a large patch, one of a small one, possess their difference of spatiality, not as an immediate element, but solely by virtue of the fact that the large one, to get its points *successively* excited, demands more muscular contraction than the small one does. Fixed associations with the several amounts of muscular contraction required in this particular experience, would thus explain the apparent sizes of the skin-patches, which sizes would consequently not be primitive data but derivative results.

It seems to me that no evidence of the muscular measurements in question exists; but that all the facts may be explained by surface-sensibility, provided we take that of the joint-surfaces also into account.

The most striking argument, and the most obvious one, which an upholder of the muscular theory is likely to produce, is undoubtedly this fact: if, with closed eyes, we trace figures in the air with the extended forefinger (the motions may occur from the metacarpal-, the wrist-, the elbow- or the shoulder-joint indifferently), what we are *conscious of* in each case, and indeed most acutely conscious of, is the geometric path described by the finger-*tip*. Its angles, its subdivisions, are all as distinctly felt as if seen by the eye; and yet the surface of the finger-tip receives no sensation at all.[1] But with each variation of the figure, the muscular contractions vary, and so do the feelings these yield. Are not these latter the sensible data that make us aware of the lengths and directions we discern in the traced line?

[1] Even if the figure be drawn on a board instead of in the air, the variations of contact on the finger's surface will be much simpler than the peculiarities of the traced figure itself.

Should we be tempted to object to this supposition of the advocate of perception by muscular feelings, that we have *learned* the spatial significance of these feelings by reiterated experiences of *seeing* what figure is drawn when each special muscular grouping is felt, so that in the last resort the muscular space-feelings would be derived from retinal-surface feelings; our opponent might immediately hush us by pointing to the fact that in persons born blind the phenomenon in question is even more perfect than in ourselves.

If we suggest that the blind may have originally traced the figures on the cutaneous surface of cheek, thigh or palm, and may now remember the specific figure which each present movement formerly caused the skin-surface to perceive, he may reply that the delicacy of the motor perception far exceeds that of most of the cutaneous surfaces—that in fact we can feel a figure traced only in its differentials, so to speak, a figure which we merely *start* to trace by our finger-tip, a figure which traced in the same way *on* our finger-tip by the hand of another is almost if not wholly unrecognisable.

The champion of the muscular sense seems likely to be triumphant until we invoke the articular cartilages, as internal surfaces whose sensibility is called in play by every movement we make, however delicate the latter may be.

To establish the part they play in our geometrising, it is necessary to review a few facts. It has long been known by medical practitioners that, in patients with cutaneous anæsthesia of a limb, whose muscles also are insensible to the thrill of the faradic current, a very accurate sense of the position into which the limb may be flexed or extended by the hand of another may be preserved.[1] On the other hand, we may have the sense of attitude impaired when the tactile sensibility is intact. That the pretended feeling of outgoing innervation can play in these cases no part, is obvious from the fact that the movements by which the limb changes its position are passive ones, imprinted on it by the experimenting physician. The writers who have sought a *rationale* of the matter have been driven by way of exclusion to assume the articular surfaces to be the seat of the perception in question.[2]

That the joint-surfaces *are* sensitive appears evident from

[1] See for example Duchenne, *Electrisation localisée*, pp. 727, 770, Leyden; *Virchow's Archiv*, Bd. xlvii. (1869).

[2] *E.g.*, Eulenburg, *Lehrb. d. Nervenkrankheiten*, Berlin, 1878, i. 3.

the fact that in inflammation they become the seat of excruciating pains, and from the perception by everyone who lifts weights or presses against resistance, that every increase of the force opposing him betrays itself to his consciousness principally by the starting-out of new feelings or the increase of old ones, in or about the joints. If the structure and mode of mutual application of two articular surfaces be taken into account, it will appear that, granting the surfaces to *be* sensitive, no more favourable mechanical conditions could be possible for the delicate calling of the sensibility into play than are realised in the minutely graduated rotations and firmly resisted variations of pressure involved in every act of extension or flexion. Nevertheless it is a great pity that we have as yet no direct testimony, no expressions from patients with healthy joints accidentally laid open, of the impressions they experience when the cartilage is pressed or rubbed.

The nearest approach to direct evidence, so far as I know, is contained in the paper of Lewinski,[1] published in 1879. This observer had a patient the inner half of whose leg was anæsthetic. When this patient stood up, he had a curious illusion about the position of his limb, which disappeared the moment he lay down again: he thought himself *knock-kneed.* If, as Lewinski says, we assume the inner half of the joint to share the insensibility of the corresponding part of the skin, then he *ought* to feel, when the joint-surfaces pressed against each other in the act of standing, the outer half of the joint most strongly. But this is the feeling he would also get whenever it was by any chance sought to force his leg into a knock-kneed attitude. Lewinski was led by this case to examine the feet of certain ataxic patients with imperfect sense of position. He found in every instance that when the toes were flexed *and drawn upon* at the same time (the joint-surfaces drawn asunder) all sense of the amount of flexion disappeared. On the contrary, when he pressed a toe *in,* whilst flexing it, the patient's appreciation of the amount of flexion was much improved, evidently because the artificial increase of articular pressure made up for the pathological insensibility of the parts.

Applying these results (which, though supported by circumstantial evidence only, seem nevertheless invulnerable) to the case of the tracing finger-tip, we see that the latter gives no countenance to the theory of localisation by muscular sense. The tip is indubitably localised at the

[1] "Ueber den Kraftsinn," *Virchow's Archiv,* Bd. lxxvii. 134.

successive points of its path by incoming sensations produced by the slipping over each other of the cartilages on which it turns; and the whole phenomenon, instead of refuting, most brilliantly corroborates the view that localisation is exclusively a surface-affair. *Muscular contraction is only indirectly instrumental in giving us space-feelings, by its objective effects on surfaces.* In the case of skin and retina, it produces a motion of the stimulus upon the surface; in the case of joints it produces a motion of the surfaces upon each other—such motion being by far the most delicate manner of sensibly exciting the surfaces in question. One is tempted to doubt whether the muscular sensibility as such plays even a subordinate part as *sign*, of these more immediately geometrical perceptions which are so uniformly associated with it as effects of a common cause—the contraction objectively considered.[1]

[1] The admirably judicious A. W. Volkmann says (*Untersuchungen im Gebiete der Optik*, Leipzig, 1863, p. 188): "Muscular feeling gives tolerably fine evidence as to the *existence* of movement, but hardly any direct information about its extent or direction. We are not aware that the contractions of a *supinator longus* have a wider range than those of a *supinator brevis;* and that the fibres of a bipeuniform muscle contract in opposite directions is a fact of which the muscular feeling itself gives not the slightest intimation. Muscle-feeling belongs to that class of general sensations which tell us of our inner states, but not of outer relations; it does not belong among the space-perceiving senses." See also *Ibid.*, p. 189, and Hering, *Beiträge*, pp. 31, 240. Weber (Article "Tastsinn") also calls attention to the fact that muscular movements as large and strong as those of the diaphragm go on continually without our perceiving them as motion. See also Lewes, *Problems*, vol. ii., p. 478. But the final crushing defeat of the muscular-sense as the chief agent in space-perception is given by Prof. Lipps in a few pages (6 to 27 of his *Psychologische Studien*, 1885), which I advise all students to read.

Nevertheless certain facts may still be brought up against our surface-theory. When we move the wings of the nostrils, the external ear and, to a certain degree, the tongue, the feeling we get is distinctly one of movement, but it involves anatomically no such passage of anything over a surface as, according to our text, it should. The explanation is that we have learned the movement-significance of these movement-feelings and skin-stretchings, by producing them "passively," by manipulating the parts on former occasions with our fingers. A personal experience, made since the text was written, seems to me strongly to corroborate this view. For years I have been familiar, during the act of gaping, with a large, round, smooth sensation in the region of the throat, a sensation characteristic of gaping and nothing else, but which, although I had often wondered about it, never suggested to my mind the motion of anything. The reader probably knows from his own experience exactly what feeling I mean. It was not till one of my students told me, that I learned its objective cause. If we look into the mirror while gaping, we see that at the moment we have this feeling, the *uvula* or hanging palate *rises* by the contraction of its intrinsic muscles. The contraction of these muscles and the com-

But if this is all so, it may well be asked: "Why do we feel the figure to be traced, not within the joint itself, but in such an altogether different place? And why do we feel it so much larger than it really is?"

I will answer these questions by asking another: Why do we move our joints at all? Surely to gain something more valuable than the insipid joint-feelings themselves. And these more interesting feelings (if we abstract from eye and ear) are in the main produced upon the *skin* of the moving part, or of some other part over which it passes. With movements of the fingers we explore the configuration of all real objects with which we have to deal, our own body as well as foreign things. Nothing that interests us is located in the joint; everything that interests us either *is*, or coincides in place with, some part of our skin. The skin-spaces come thus to figure as the important ones for us to concern ourselves with. Every time the joint moves, even though no skin-sensation occurs, the reminiscence of skin-sensations which formerly coincided with that extent of movement, ideally awaken as the movement's import, and the mind drops the present sign to attend to the import alone. The joint-sensation itself, and as such, does not disappear in the process. A little attention easily detects it, with all its fine peculiarities, hidden beneath its vaster suggestions; so that really the mind has two space-perceptions before it, congruent in form but different in scale and place, either of which exclusively it may notice, or both at once,—the joint-space it *feels* and the real space it *means*.

The joint-spaces serve so admirably as signs because of their capacity for *parallel variation* to all the peculiarities of external motion. There is not a direction in the real world nor a ratio of distance, which cannot be matched by some direction or extent of joint-rotation. Joint-feelings, like all feelings, are roomy. Specific ones are contrasted *inter se* as

pression of the palatine mucous membrane are what occasion the feeling; and I was at first astonished that, coming from so small an organ, it could appear so voluminous. Now the curious point is this—that no sooner had I learnt by the eye its objective space-significance, than I found myself enabled mentally to *feel* it as a movement upwards of a body in the situation of the uvula. When I now have it, my fancy *injects* it, so to speak, with the image of the rising uvula; and it *absorbs* the image easily and naturally. In a word, a muscular contraction gave me a sensation whereof I was unable during forty years to interpret a motor meaning, of which two glances of the eye made me permanently the master. To my mind no further proof is needed of the fact that muscular contraction, merely as such, need not be perceived directly as so much motion through space.

different directions are contrasted within the same extent. If I extend my arm straight out at the shoulder the rotation of the shoulder-joint will give me one feeling of movement; if then I sweep the arm forward, the same joint will give me another feeling of movement. Both these movements are felt to happen in space, and differ in specific quality. Why shall not the specificness of the quality just consist in the feeling of a peculiar *direction?* Why may not the several joint-feelings *be* so many perceptions of movement in so many different directions? That we cannot explain why they *should* is no presumption that they *do* not, for we never can explain why any sense-organ should awaken the sensation it does.

But if the joint-feelings are directions and extents, standing in relation to each other, the task of association in interpreting their import in eye- or skin-terms is a good deal simplified. Let the movement *bc*, of a certain joint, derive its absolute space-value from the cutaneous feeling it is always capable of engendering; then the longer movement *abcd* of the same joint will be judged to have a greater space-value, even though it may never have wholly merged with a skin-experience. So of differences of direction: so much joint-difference = so much skin-difference; therefore more joint-difference = more skin-difference. In fact, the joint-feeling can excellently serve as a *map* on a reduced scale, of a reality which the imagination may project at its pleasure into this or that part of objective space.

When the joint-feeling in itself acquires an emotional interest,—which happens whenever the joint is inflamed and painful,—the secondary suggestions fail to arise and the movement is felt where it is, and in its proper scale of magnitude.

I have said hardly anything about associations with visual space in the foregoing account, because I wished to represent a process which the blind man and the seeing might equally share. It is to be noticed that the space suggested to the imagination and projected to the distance of the finger-tip is not represented as any such *specific* skin-tract as that of cheek or palm, by means of which the 'meaning' of the joint-rotation may originally have been learned. What the mind imagines is rather a generic image, an abstraction from many skin-spaces whose local-signs have neutralised each other by blending, and left nothing but their common vastness behind. We shall see as we go on that this generic abstraction of space-magnitude from the various local peculiarities of feeling which accompanied it when it was

for the first time felt, occurs on a considerable scale in the acquired perceptions of blind as well as of seeing men.

(*e*) *Extradition.*

It is now necessary to carry our study of the imaginary projection of feelings still further, and to follow out those cases where we seem to perceive directly by the sense of touch what happens at distances far removed from any sensory surface of the body. Take first a few more facts.

If one of the hairs of our head be pulled, we are pretty accurately sensible of the direction of the pulling by the movements imparted to the head.[1] But the feeling of the pull is localised, not in that part of the hair's length which the fingers hold, but in the scalp itself. This seems connected with the fact that our hair hardly serves at all as a tactile organ. In creatures with *vibrissæ*, however, and in those quadrupeds whose whiskers are tactile organs, it can hardly be doubted that the feeling is projected out of the root into the shaft of the hair itself. We ourselves have an approach to this when the beard as a whole, or the hair as a whole, is touched. We perceive the contact at some distance from the skin.

When fixed and hard appendages of the body, like the teeth and nails, are touched, we feel the contact where it objectively is, and not deeper in, where the nerve-terminations lie. If, however, the tooth is loose, we feel two contacts, spatially separated, one at its root, one at its top.

From this case to that of a hard body not organically connected with the surface, but only accidentally in contact with it, the transition is immediate. With the point of a cane we can trace letters in the air or on a wall just as with the finger-tip ; and in so doing feel the size and shape of the cane's path just as immediately as formerly we seemed to feel the path described by the finger. Similarly the draughtsman's immediate perception seems to be of the point of his pencil, the surgeon's of the end of his knife, the duellist's of the tip of his rapier as it plunges through his enemy's skin. When on the middle of a vibrating ladder, we feel not only our feet on the round, but the ladder's feet against the ground far below. If we shake a locked iron gate we feel the middle, on which our hands rest, move, but we equally

[1] This is proved by Weber's device of causing the head to be firmly pressed against a support by another person, whereupon the direction of traction ceases to be perceived.

feel the stability of the ends where the hinges and the lock are, and we seem to feel all three at once.[1]

Such examples open up the whole subject of Extradition, one of the most difficult problems which can occupy the space-philosopher. We shall see later in the special section on vision that the third dimension, or depth, has always been the stumbling-block of theorists. Here, however, it behoves us to note that the seeming migration we have just studied, of a feeling from a joint to a finger-tip, with concomitant enlargement of size, seems to differ in no essential respect from those migrations beyond the skin with greater enlargement still. Closer examination will corroborate this essential identity of the two cases, and the examination will be much facilitated by recalling a few general principles at the start. We saw that all sensations are voluminous or contain the third dimension in a vague way. Projection, which is localisation of an impression at a determinate distance in this dimension, involves three factors: (1) feeling the extent of the dimension as a whole; (2) discriminating a partial sensation within it; (3) measuring the distance of that sensation from one of the extremes.

It would appear therefore that, in the first instance at any rate, a sensation can be projected or extradited, only if it form part of a space-volume felt all at once, or in continuous succession. The mind in projecting would seem to identify its own position with that of one part of this volume, as a *here*, and detach from itself the other part, as a *there*. Now the centre the mind has thus chosen for its own felt habitation is undeniably sometimes within the head, sometimes within the throat or breast—not a rigorously fixed spot there, but a region within which it seems to itself to move,[2] and from any portion of which it may send forth its various acts of attention. Extradition from either of *these* regions is the common law under which we perceive the whereabouts of the north star, of our own voice, of the contact of our teeth with each other, of the tip of our finger, the point of our cane on the ground, or a pain in our elbow-joint. The appearance of a feeling in the joint is as much a projection or a migration as its appearance in the north star would be. Amputations show how, owing to central excitement, limbs no longer existing are felt in their old site, or somewhat retracted. But the fact of extradition is the same when the

[1] Cp. Lotze, *Med. Psych.*, 428-433; Lipps, *Grundtatsachen des Seelenlebens*, 582.

[2] The reader is reminded of the facts mentioned in sec. 1.

limb is there[1] as when it is not. Extradition obtains, then, even of such sensations as we locate on the exact sensory surfaces where the nerves terminate. Could we feel our *retinal* pictures *where they are*, this would involve a dealing with the third dimension quite as thorough as does our feeling them across the room. The distinction so often made between our primitive spatial perception as that of a surface, and our perception of the third dimension as subsequent and acquired, is utterly baseless. For to feel any surface, *as such*, involves all three dimensions.

The only difference between primitive and acquired in this department of consciousness is the difference between vague and unbroken on the one hand, and subdivided and measured on the other. It is conceivable that the *subdivision* of either dimension might be earlier and more accurate than that of the two others, but it is inconceivable that either dimension should appear out of relation to the others, inconceivable that the very earliest apprehension of space should not be that of space cubic, as it really exists. Those philosophers therefore who hold that the *prius* of all external perception is the vague consciousness of the body as cubically extended must be held to be essentially in the right.[2]

To return now, after this theoretic digression, to our special facts. *For a joint to be felt* in situ, *the entire intervening mass of tissue between it and the brain must be susceptible of becoming one continuous object of perception.* The existence of this intervening space-object is the *conditio sine qua non* of the joint's 'projection' to the farther end of it. To say nothing of other ways in which this space may be felt (as by the eye or the exploring hand), it is felt by means of its *own* nerves, whose local-signs pass gradually into those in and about the joint, and give us, whenever they awaken together, a unitary massive space. For the finger-tip to be felt where

[1] In a purely subjective account, its 'being' there means, of course, only the presence of other feelings than the one in question, projected 'there' just as it is.

[2] Of late years the doctrine has been revived by I. H. Fichte and Ulrici that the soul itself is a cubically extended substance pervading the body, and that the latter becomes the "immediate object" in perception through the fact that the perceiving subject is coextensive with it. And this view has been defended in a recent American work of unusual critical ability—*The Perception of Space and Matter*, by J. E. Walter, Boston, 1880. (Cp. Noah Porter's *Human Intellect*, p. 130.) But it is not necessary that we should commit ourselves either to the theory of an extended soul-substance or to that of the body as "immediate object". I only cite these theories to illustrate the need which coerces men to postulate *something* tridimensional as the first thing in external perception.

it is, a still longer intervening *continuum* must be sensible, with the feeling lodged at its end.

But how, when the space between the brain and the point of projection has no nerves (which is the case with spaces beyond the body's limits), is it to be felt as an intervening *continuum* at all? Simply by forming *with* the mass of sensitive tissue and surface beyond which it extends a *new object for some other sense.*

Suppose the cane held in my right hand and its point pressed against the wall. I can, by paying attention, feel the whole solidity of my arm, the sensations in its joints as they move, and the pressure of the fingers upon the cane. But I also feel the wall where the cane touches it a yard away from my hand. Now this yard forms with the arm a common object, either for the exploring motion of my left hand (which may pass first down the right arm, and then down the cane it holds, by a combination of continuous movements); or for the skin of the body and leg, against the length of which both arm and cane may be applied.[1] This common objectivity of arm and cane gives the space of the projection as a whole, the first of those three factors which we saw extradition to involve.

The next factor is the particular kind of sensation to be extradited. This can be nothing else than the feeling of the hardness or softness of the wall as it would affect our exploring hand. The similarity of the cane's actual pressure to this ideal pressure makes it seem as if the actual feeling of the hand had migrated into a new place. Most probing and palpating instruments are rigid, and communicate without alteration the feeling the hand itself would receive if it took the place of their farther extremity. Finally, the last factor is the precise distance within the total depth at which the sensation shall be lodged. In the case of the rigid stick this offers no difficulty. Easy experiences teach us that the cane's tip is the point from which diverge all the pressures it exerts upon our hand. Thither accordingly we send our image of the resisting thing we feel. When the cane is flexible, its own changes of shape become important, and we lodge the feeling of resistance partly in its tip, partly along its whole length. If we move the cane's tip through the air, instead of letting it touch the wall, all we need do is to multiply our hand-movement sensations by a certain factor corresponding to the cane's length. This gives us the distinct image of a large path traversed by the tip. This

[1] Again I omit all mention of the eye, so as to account for the blind man.

ideal and uniform enlargement of a system of sensations is nothing exceptional. Vision is full of it; and in the manual arts, where a workman gets a tool larger than the one he is accustomed to and has suddenly to adapt all his movements to its scale, or where he has to execute a familiar set of movements in an unnatural position of body; where a piano-player meets an instrument with unusually broad or narrow keys; where a man has to alter the size of his handwriting, —we see how promptly the mind multiplies once for all, as it were, the whole series of its operations in advance by a constant factor, and has not to trouble itself after that with further adjustment of the details.

We have now to pass to the great subject of Visual Space, and in view of what is to follow may best at this stage append (in a Supplementary Note) some remarks on the peculiarities of the blind man's perception. But before closing the present section, let us look back for a moment upon the results of the last pages, and ask ourselves again whether the building up of the more systematic and orderly space-perceptions out of the more chaotic primitive ones requires any other mental powers than those displayed in ordinary intellectual operations. I think it is obvious— granting the spatial *quale* to exist in the primitive sensations,—that discrimination, association, addition, multiplication and division, blending into generic images, substitution of similars, selective emphasis, and abstraction from uninteresting details, are quite capable of giving us all the space-perceptions we have so far studied, without the aid of any mysterious "mental chemistry" or power of "synthesis" to create elements absent from the original data of feeling. It cannot be too strongly urged in the face of mystical attempts, however learned, that there is not a landmark, not a length, not a point of the compass in real space which *is* not some *one* of our feelings, either experienced directly as a presentation or ideally suggested[1] by another feeling which has come to serve as its sign. In degrading some sensations to the rank of signs and exalting others to that of realities signified, we smooth out the wrinkles of our first chaotic impressions and make a continuous order of what was a rather incoherent multiplicity. But the *content* of the order remains identical with that of the multiplicity—sensational both, through and through.

[1] A generic image of several space-feelings of the same sphere of sensibility may take the place of an individual image in the case of ideal suggestion, where the latter is not of a definitely measured extension.

NOTE.—*The Space of the Blind.*

The blind man's construction of real space differs from that of the seeing man most obviously in the larger part which synthesis plays in it, and the relative subordination of analysis. The seeing baby's eyes take in the whole room at once, and discriminative attention must arise in him before single objects are visually discerned. The blind child, on the contrary, must form his mental image of the room by the addition, piece to piece, of parts which he learns to know successively. With our eyes we may apprehend instantly an enormous bird's-eye-view of a landscape which the blind man is condemned to build up bit by bit after weeks perhaps of exploration. We are exactly in his predicament, however, for spaces which exceed our visual range. We think the ocean as a whole by multiplying mentally the impression we get at any moment when at sea. The distance between New York and San Francisco is computed in day's journeys; that from earth to sun is so many times the earth's diameter, &c.; and of longer distances still we may be said to have no adequate mental image whatever, but only numerical verbal symbols.

But the symbol will often give us the emotional effect of the perception. Such expressions as the abysmal vault of heaven, the endless expanse of ocean, &c., summarise many computations to the imagination, and give the sense of an enormous horizon. So it seems with the blind. They multiply mentally the amount of a distinctly felt freedom to move, and gain the immediate sense of a vaster freedom still. Thus it is that blind men are never without the consciousness of their horizon. They all enjoy travelling, especially with a companion who can describe to them the objects they pass. On the prairies they feel the great openness; in valleys they feel closed in; and one has told me that he thought few seeing people could enjoy the view from a mountain top more than he. A blind person on entering a house or room immediately receives, from the reverberations of his voice and steps, an impression of its dimensions, and to a certain extent of its arrangement. The tympanic sense noticed on pp. 5, 6 comes in to help here, and possibly other forms of tactile sensibility not yet understood. Mr. W. Hanks Levy, the blind author of *Blindness and the Blind* (London), gives the following account of his own powers of perception:—"Whether within a house or in the open air, whether walking or standing still, I can tell, although quite blind, when I am opposite an object, and can perceive whether it be tall or short, slender or bulky. I can also detect whether it be a solitary object or a continuous fence; whether it be a close fence or composed of open rails; and often whether it be a wooden fence, a brick or stone wall, or a quick-set hedge. I cannot usually perceive objects if much lower than my shoulder, but sometimes very low objects can be detected. This may depend on the nature of the objects, or on some abnormal state of the atmosphere. The currents of air can have nothing to do with this power, as the state of the wind does not directly affect it; the sense of hearing has nothing to do with it, as when snow lies thickly on the ground objects are more distinct, although the footfall cannot be heard. I seem to perceive objects through the skin of my face, and to have the impressions immediately transmitted to the brain. The only part of my body possessing this power is my face; this I have ascertained by suitable experiments. Stopping my ears does not interfere with it, but covering my face with a thick veil destroys it altogether. None of the five senses have anything to do with the existence of this power, and the circumstances above named induce me to call this unrecognised sense by the name of 'facial perception'. . . . When passing along a street I can distinguish shops from private houses, and even point out the doors and windows, &c., and this whether the doors be shut or open. When a window consists of one entire sheet of glass, it is more difficult to discover

than one composed of a number of small panes. From this it would appear that glass is a bad conductor of sensation, or at any rate of the sensation specially connected with this sense. When objects below the face are perceived, the sensation seems to come in an oblique line from the object to the upper part of the face. While walking with a friend in Forest Lane, Stratford, I said, pointing to a fence which separated the road from a field, 'Those rails are not quite as high as my shoulder'. He looked at them, and said they were higher. We, however, measured, and found them about three inches lower than my shoulder. At the time of making this observation I was about four feet from the rails. Certainly in this instance facial perception was more accurate than sight. When the lower part of a fence is brick-work, and the upper part rails, the fact can be detected, and the line where the two meet easily perceived. Irregularities in height, and projections and indentations in walls, can also be discovered." According to Mr. Levy, this power of seeing with the face is diminished by a fog, but not by ordinary darkness. At one time he could tell when a cloud obscured the horizon, but he has now lost that power, which he has known several persons to possess who are totally blind. These effects of aqueous vapour suggest immediately that fluctuations in the heat radiated by the objects may be the source of the perception. One blind gentleman, Mr. Kilburne, an instructor in the Perkins Institution in South Boston, who has the power spoken of in an unusual degree, proved, however, to have no more delicate a sense of temperature in his face than ordinary persons. He himself supposed that his ears had nothing to do with the faculty until a complete stoppage of them, not only with cotton but with putty on top of it, by abolishing the perception entirely, proved his first impression to be erroneous. Many blind men say immediately that their ears are concerned in the matter.

Sounds certainly play a far more prominent part in the mental life of the blind than in our own. In taking a walk through the country, the mutations of sound, far and near, constitute their chief delight. And to a great extent their imagination of distance and of objects moving from one distant spot to another seems to consist in thinking how a certain sonority would be modified by the change of place. It is unquestionable that the semi-circular canal feelings play a great part in defining the points of the compass and the direction of distant spots, in the blind as in us. We *start* towards them by feelings of this sort; and so many directions, so many different-feeling 'starts'.

The only point that offers any theoretic difficulty is the prolongation into space of the direction, after the start. We saw on p. 206 that for extradition to occur beyond the skin, the portion of skin in question *and* the space beyond must form a common object for some other sensory surface. The eyes are for most of us this sensory surface; for the blind it can only be other parts of the skin, coupled or not with motion. But the mere gropings of the hands in every direction must end by surrounding the whole body with a sphere of felt space. And this sphere must become enlarged with every movement of locomotion, these movements gaining their space-values from the semi-circular-canal-feelings which accompany them, and from the farther and farther parts of large fixed objects (such as the bed, the wainscotting or a fence) which they bring within the grasp. It might be supposed that a knowledge of space acquired by so many successive discrete acts would always retain a somewhat jointed and so to speak granulated character. When we who are gifted with sight think of a space too large to come into a single field of view, we are apt to imagine it as composite, and filled with more or less jerky stoppings and startings (think, for instance, of the space from here to San Francisco), or else we reduce the scale to an intuitively manageable one, and imagine how much

larger on a map the distance would look than others with whose totality we are familiar.

I am disposed to believe, after interrogating many blind persons, that the use of imaginary maps on a reduced scale is not as frequent with them as with the rest of us. Possibly the extraordinary changeableness of the visual magnitudes of things makes this habit natural to us, while the fixity of tactile magnitudes keeps them from falling into it. (When the blind young man operated on by Dr. Franz was shown a portrait in a locket, he was vastly surprised that the face could be put into so small a compass: it would have seemed to him, he said, as impossible as to put a bushel into a pint.) Be this as it may, however, the space which each blind man feels to extend beyond his body is felt by him as one smooth continuum—all trace of those muscular startings and stoppings and reversals which presided over its formation having been eliminated from the memory. It seems, in other words, a generic image of the space-element common to all these experiences, with the unessential particularities of each left out. In truth, *where* in this space a start or a stop may have occurred, was quite accidental. It may never occur just there again, and so the attention lets it drop altogether. Even as long a space as that traversed in a several-mile walk will not necessarily appear to a blind man's thought in the guise of a series of locomotor acts. Only where there is some distinct locomotor difficulty, such as a step to ascend, a difficult crossing, or a disappearance of the path, will distinct locomotor images constitute the idea. Elsewhere the space seems continuous, and its parts may even all seem co-existent; though, as a very intelligent blind friend once remarked to me, "To think of such distances involves probably more mental wear and tear and brain-waste in the blind than in the seeing". This seems to point to a greater element of successive addition and construction in the blind man's idea.

Our own visual explorations go on by means of innumerable stoppings and startings of the eyeballs. Yet these are all effaced from the final space-sphere of our visual imagination. They have neutralised each other. We can even distribute our attention to the right and left sides simultaneously, and think of those two quarters of space as co-existent. Does the smoothing out of the locomotor interruptions from the blind man's tactile space-sphere offer any greater paradox? Surely not. And it is curious to note that both in him and in us there is one particular locomotor feeling that is apt to assert itself obstinately to the last. We and he alike spontaneously imagine space as lying *in front* of us, for reasons too obvious to enumerate. If we think of the space behind us we, as a rule, have to *turn round* mentally, and in doing so the front space vanishes. But in this, as in the other things of which we have been talking, individuals differ widely. Some, in imagining a room, can think of all its six surfaces at once—like Mr. Galton's correspondents quoted in MIND v. 315. Others mentally turn round, or, at least, imagine the room in several successive and mutually exclusive acts.

Sir Wm. Hamilton (*Lects. on Metaphysics*, ii. 174) has, by resuscitating it, given to the foolish opinion of a German philosopher of the last century, Platner, greater currency among us than it deserves. Platner says: "The attentive observation of a person born blind . . . has convinced me that the sense of touch by itself is altogether incompetent to afford us the representation of extension and space. . . . In fact, to those born blind, time serves instead of space. Vicinity and distance mean in their mouths nothing more than the shorter or longer time . . . necessary to attain from some one feeling to some other." It is needless to remark on the utterly arbitrary and fanciful character of such an interpretation. No opinion is so silly but it will find some "learned Theban" to defend it. Platner's doctrine may well pair off with that of Brown, the Mills and other English psychologists, who hold colours to be primitively seen without extension.

III.—FURTHER PROBLEMS OF HYPNOTISM. (I.)[1]

By Edmund Gurney.

It is difficult to get a satisfactory definition of what constitutes 'hypnotic trance'. If we begin at the bottom of the scale—with animals that have been subjected to certain processes of fixation and manipulation—the only phenomena open to observation are immobility and anæsthesia; animals present nothing corresponding to what I have called the "alert stage" (see Mind No. 33)—less accurately, I think, described as the *somnambulic* stage—of hypnotism. It would be pedantic, perhaps, to refuse to call their state one of hypnotisation, when it has been produced by means similar to those employed to hypnotise human beings, and when their condition appears analogous to the deeper or comatose stage of human trance; still it would obviously be impossible to accept immobility and anæsthesia as affording a sufficient definition of a hypnotic condition, for at that rate a deeply chloroformed patient would be 'hypnotised'. And when we turn to human beings, there seem to be strong reasons against taking the ground of definition from any *physical* symptoms. Analgesia, diminished sensibility of the conjunctiva, &c., are not distinctive, and are not constant. Increased muscular irritability and catalepsy are frequently absent in 'subjects' who manifest the most interesting psychical phenomena; moreover, these muscular peculiarities are common to certain affections generally called hypnotic and to certain affections generally called hysterical, and for no purpose is a definition of hypnotism more needed than to distinguish it from *morbid* affections—to preserve a state whose most interesting features may be observed at a minute's notice in strong and healthy young men, from any necessary association with the idea of lesion or chronic instability. 'Inhibition of inhibitory functions' is the sufficient, though clumsy, description of the immediate ground of many hypnotic phenomena, including mechanical imitations of gesture, mechanical continuance of particular muscular movements and diminished reaction-time; but this ground is clearly too general to found a definition upon—the same sort of inhibition being involved in a

[1] See Mind ix. 110, 477 (Nos. 33, 36).

minor degree in all manner of circumstances of absorbed attention or sudden shock. It appears to me that the only serviceable definition must depend on the idea of what I have ventured in a former paper (MIND No. 36) to call "psychical reflex action". That is to say, I should confine the term 'hypnotic trance' to a state in which (or in some stage of which) inhibition reaches the higher inhibitory and co-ordinating faculties; and particular ideas, or groups of ideas, readily dissociating themselves from their normal relation to other groups and to general controlling conceptions, and throwing off the restraint proper to elements in a sane scheme, respond with abnormal vigour and certainty to any excitations that may be addressed to them. Such response may be shown (1) in the inhibition, by command, of ordinary muscular movements or control of movements; (2) in the ease with which the 'subject's' mind can be steered, so to speak, in the course of conversation or narration; but chiefly (3) in the ready imposition, by external suggestion, of sensory hallucinations, or (4) of abnormal lines of conduct. This psychical characteristic (educible, if not actually educed, in the 'subject'—see MIND No. 33) has belonged to nearly all the cases which have been described as hypnotic, and, in a marked degree, scarcely to any others; for only by the rarest exception does it occur spontaneously in morbid cases. As thus defined, moreover, hypnotism is conveniently marked off from the natural condition—somnambulism—to which it is most akin. And the definition has the further advantage of emphasising what are not only the most constant but also decidedly the most important and instructive of the hypnotic phenomena.[1] For in every branch of mental and moral science—psychology, ethics, jurisprudence and, we may add, the extraordinary therapeutical applications of 'suggestion'—the interest of Hypnotism, of which every year witnesses a marked advance, has centred in the various forms of mono-ideism embraced under the conception of "psychical reflex action".

Now all this interest has to do, of course, with the state itself, not with its genesis. The facts studied are peculiarities of mental condition which appear after the induction, by whatever means, of a certain stage of hypnotic trance. Questions connected with the means by which the trance may be induced have held for the psychologist a subordinate

[1] Such a definition of the trance proper need not, of course, prevent us from applying hypnotic terms to *local* affections—such as the rigidity or anæsthesia of a single limb—which are brought about by means similar to those used in the production of trance

position: he has at most attempted to supplement the ordinary physiological doctrines as to the effect of 'fixation' and 'monotonous stimulation' by the conception of 'attention'—an attempt which has been misleading, in so far as it has implied that attention on the part of the 'subject' (who may be an infant or a cray-fish) is a general condition of hypnotisation. Certain recent events, however, have given special importance to this topic of trance-induction or 'hypnogeny,'[1] and have raised in a startling form the question of the efficacy of psychical influence as a hypnogenetic agent. And this question naturally connects itself with a more general inquiry respecting 'specific influence' and 'mesmeric *rapport*'—topics which, in my last paper, I noticed only to avoid, as not at that time coming within the most extended limits of scientific recognition, but which analysis may perhaps rob of some of their mystery, and which I am now at least justified in having described as lying "in the direct path of orthodox hypnotic experiment".

In the paper just referred to (MIND No. 36) I dwelt on the fact that the various processes by which hypnotic trance may be induced—whether regarded in their *physical* aspects, as fixation of the eyes or gentle peripheral stimulation, or in their *psychical* aspects, as expectation or attention—do little or nothing to explain the condition which ensues, inasmuch as nothing that we know, outside hypnotism, would have led us to predict that the results would follow the processes; so that the "profound nervous change," which Braid proclaimed as the immediate cause of the results, has still to be accepted as an ultimate fact. And I further drew attention to the peculiarity that the production of this profound nervous change seems, in the first instance, always to require some distinct *physical* stimulation;[2] though, after it has once been induced, the mere idea of it, associated with that of the original hypnotiser—*e.g.*, if he gives the command '*Dormez!*'—may be enough to cause its recurrence. So far as I am aware, no distinctly hypnotic condition has ever been originally induced by a mere idea or a merely emotional

[1] This term is not a happy one, as it contains no indication of the fundamental difference between hypnotic trance and ordinary sleep; but it is difficult to think of a tolerable substitute.

[2] An example recorded by Esdaile, who professes to have hypnotised a blind man for the first time by steadily gazing at him from a distance of 20 yards, would appear to be an exception. I admit the force of Esdaile's testimony; but the account was not written till after he had frequently hypnotised the man, and it seems possible that his memory betrayed him as to the circumstances of the first experiment.

stimulus. No doubt a favourable attitude of mind on the part of an exceptionally sensitive 'subject' may so prepare the organism, and the physical stimulus that supervenes may be of so simple and ordinary a kind, that its essential part in the result is liable to be overlooked. Thus it is said of certain French 'subjects' that a moment's fixation of attention, followed by a command to sleep, has proved effective even on a first occasion; and it may then seem reasonable to refer the change of state to the mere idea of sleep, or to the expectancy of a sudden change as soon as the command was given. But the idea of sleep had been present for some time, without the effect being produced; I, at any rate, know of no instance where precautions were taken to keep the 'subject' entirely ignorant of the intended trial up to the moment that it was made. And if it were enough to be expectant of a sudden change when the command came, the change ought equally to supervene if the operator gave his command silently, *e.g.*, by means of the 'dumb alphabet'. Till some such case is recorded, we seem justified in attributing this *sudden* change to the *suddenly* presented new element —*i.e.*, the arresting sound of the operator's voice. When the 'subject' is of a specially unstable constitution, the condition of expectancy may be wholly dispensed with, and a rather stronger stimulus—a distinct shock—will then be necessary; but always of a physical sort. The mental shock of surprise or terror may, as we all know, produce temporary paralysis of motor power and other physical effects; but the only shocks which have been followed by the characteristic phenomena of hypnotic trance have been those due to a sudden loud sound or sudden bright light. It is worth remarking, by the way, that the state produced in this way is always that of *catalepsy*, not that of *lethargy*, which is the more common first stage of hypnotism. The difference between these two states has, I believe, been considerably exaggerated by the school of the Salpêtrière; but so far as they really differ, it is of interest that the direct production of either should equally lead on to that unbalanced but potentially active mental condition in which the characteristic *somnambulic* phenomena present themselves. For this suggests that the unbalancing depends not so much on the special nature as on the suddenness of the change; and that the somnambulic phenomena may be liable to appear after *any* very rapid shifting of the level of consciousness, which does not, like ordinary sleep, sink the reason below the point where attention can be attracted to imposed hallucinations and commands, and which is not, like the passage into

ordinary sleep, checked and transformed at once to normal wakefulness by external solicitations. It would at any rate be worth inquiry whether there is any stage in the path to unconsciousness, as produced by ordinary anæsthetic agents, during which the well-known phenomena of hypnotic suggestion could be in some degree reproduced.

But however that may be, the hypnotism which we know —where the change is independent of toxic substances and is comparatively stable when once induced—will always retain its peculiar character. And the tendency of recent inquiry has been, on the whole, to give further emphasis and precision to the view which would confine original hypnogenetic efficacy to special peripheral excitations, either of the organs of special sense or applied in the way of pressure to special points or tracts on the body. The reason of the specific cerebral change, the course of the nervous discharges which issue in the inhibition of central control or in the various muscular peculiarities which hypnotised persons present,—these are as unknown as ever; but the known points of attack by which the central citadel can be reached have multiplied; and where sensitiveness reaches a certain point, the operator can bring about a series of well-marked modifications of the trance-condition by physical manipulation, with almost as much certainty as the organist can manipulate his stops.[1] The very latest advance, however, would seem, at first sight, to have been in exactly the opposite direction, and to suggest a mode of affection in which no part is played either by peripheral stimulus, or by suggestion and expectancy tending, through association, to re-induce a state induced in the first instance by peripheral stimulus. I refer to the recently recorded French successes in the production of *sommeil à distance*—hypnotic trance due to the concentration of the hypnotiser's will without the 'subject's' knowledge, and altogether beyond the range of the 'subject's' senses. Not that this form of experiment is by any means new: the history of hypnotism—or mesmerism, as in this connexion it has been more often called —has presented a good many sporadic instances of such distant effects.[2] But even had the earlier reports been given with complete detail and with ample corroboration (which

[1] See especially Dr. A. Pitre's *Des Zones hystérogènes et hypnogènes* (Bordeaux, 1885).

[2] *Phantasms of the Living*, vol. i., p. 88; vol. ii., pp. xxvi. and 679-87. For another discussion of the subject see Mr. F. W. H. Myers's paper on "Telepathic Hypnotism," in the *Proceedings of the Society for Psychical Research*, pt. x.

has rarely been the case), it is inevitable that facts so startling, and so alien to scientific preconceptions, should depend for their acceptance almost entirely on *contemporary* evidence; and this being so, the recent well-attested cases are of extreme importance. They have indeed an importance over and above that which attaches to them in their hypnotic character. For they form a species in a general class of affections extending far beyond the limits of hypnotism, and embracing every sort of impression made by one person on another otherwise than through the recognised channels of sense. To such impressions the convenient term *telepathy* has been appropriated. And inasmuch as hypnotism, being a physiological and in some respects a medical curiosity, has a specially good chance of attracting the notice of trained observers to its various phases, it would not be surprising if the phenomena of distant trance-induction were the first branch of telepathy to win the confident and general adhesion of scientific men; as indeed they might have done many years ago, but for their association with the wild theories and grotesque pretensions of 'mesmerists'. It is probable also that France will continue to be the principal scene of these interesting observations; partly owing to a spirit of disengagedness and openness to new ideas, which seems specially to characterise the medical faculty of that country, but chiefly because the French temperament appears to be on the whole decidedly more susceptible than the English to hypnotic affections, just as Esdaile found the Hindoo to be; and there being a larger percentage of good 'subjects' to work with, it may naturally be expected that among them will be found the *rarœ aves* on whom the demonstration of the more delicate hypnotic phenomena must depend.

I can only describe the cases here in brief outline; they are naturally far more impressive in their original form (*Revue Philosophique*, for February and April, 1886).

(1) The first case is from Prof. Pierre Janet, of Havre, who observed it in conjunction with Dr. Gibert, the leading physician of that town. The 'subject,' Mme. B., was an honest and simple peasant-woman, enjoying good health, though liable, from childhood, to fits of somnambulism. During a stay at Havre, in the autumn of 1885, she proved easy to hypnotise, and at once showed in various ways a marked *rapport* with the person who had hypnotised her. For instance, while she was in the "deep state," insensible to all ordinary stimuli, the contact or proximity of the hypnotiser's hand would induce in her partial or general contractures, which a light touch from him could again remove—no one else being able to produce either effect in the slightest degree. After about ten minutes of deep trance she would pass into the "alert" or somnambulic state, from which she could be wakened into the normal state by the operator, and by him alone. It

was further noted that the hypnotisation was difficult or impossible unless the operator concentrated his thoughts on the desired result. Various experiments in thought-transference were completely successful: they took the form of strongly willing, during Mme. B.'s trance, that she should do some quite unlikely thing at a particular hour, the mental command being as punctually obeyed as if it had been expressed in words.

The attempts at producing *sommeil à distance* were suggested by the discovery already mentioned of the need that the operator's will should co-operate in the hypnotic process. It was then found that the will alone was sufficient. "Pressure of Mme. B.'s hand, without the idea of entrancing her, was ineffectual; but the idea without the pressure succeeded perfectly." The next step was for Dr. Gibert to make the attempt when in another part of the town, and at a moment selected not by himself but by M. Janet or another friend. On two of these occasions M. Janet found Mme. B. in a deep trance, from which only Dr. Gibert could wake her; on a third occasion she had felt the strong impulse to sleep, but had opposed it by putting her hands into cold water.

A series of successes of the same kind were obtained in the spring of 1886; three of which, witnessed by Mr. F. W. H. Myers and Dr. A. T. Myers in the spring of 1886, are described in the paper of the former referred to in last footnote. On one of these occasions Dr. Gibert, on the other two M. Janet, was the hypnotiser; and on each of the three the 'subject' seemed clearly to recognise to which influence she had been exposed. Of this second series M. Janet writes that, putting aside mental suggestions of trance made in the presence of the 'subject' or in an adjoining room, "the trials made at a distance of at least 500 metres from Mme. B.'s abode amount to 21. I do not count a trial made in the middle of the night, under unfortunate conditions; and I count as failures all experiments where the 'subject' was not found entranced on our entering her abode, or where the trance did not follow the mental suggestion within a quarter of an hour. These failures (each of which may admit of a complete explanation) were six in number. There remain, then, 15 precise and complete successes—extraordinary coincidences, whatever interpretation of them we choose to adopt." During this period, Mme. B. did not fall into a trance on any other occasion than those mentioned.

(2) The next account is from Dr. J. Héricourt, one of M. Richet's ablest assistants in the editing of the *Revue Scientifique*. The observations were made and recorded in 1878, though not published till last year, *pour des raisons faciles à comprendre*. The 'subject'—Mme. D.—was a young widow, in whom no trace of hysteria could be discovered. M. Héricourt found her exceedingly easy to hypnotise, and after about a fortnight could entrance her by his will alone, exercised without any word or gesture, and sometimes while Mme. D. was in the midst of an animated conversation with other persons. On the other hand, he found that all the ordinary physical processes remained completely ineffectual if his will was not that the trance should ensue. He soon began to extend the distance between himself and his 'subject,' and instead of producing the effect from one corner of a room to another, he could produce it from one house or one street to another. The first trial from a distant street was specially interesting. While concentrating his thoughts on the desired effect, at 3 P.M., Dr. Héricourt was summoned to see some patients, and for a time forgot all about Mme. D. He then remembered that he was engaged to meet her on the promenade at 4·30, but not finding her, he bethought him that possibly his experiment had succeeded, and towards 5 o'clock he vigorously willed that she should wake. In the evening Mme. D., spontaneously, and without

his having made the slightest allusion to her absence from the promenade, informed him that about 3 o'clock she had been suddenly seized by an irresistible inclination to go to sleep, though she never slept in the daytime. It was all she could do to walk into another room, where she fell on a sofa, and was afterwards found by a servant, cold and motionless, *comme morte*. The servant shook Mme. D. vigorously, but could not make her do more than open her eyes. All that Mme. D. remembered experiencing at this time was a violent headache, which disappeared towards 5 o'clock, the hour when M. Héricourt willed the undoing of his work.

This experiment was the first of a series, during which a number of persons had the opportunity of arranging the conditions and testing the results. The hypothesis of expectant attention was doubly excluded ; for if M. Héricourt gave Mme. D. notice of his intention to entrance her, but actually willed that she should remain awake, she retained her normal condition, and imagined that he had failed.

(3) The next case, contributed by Dr. E. Gley, of 37 Rue Claude Bernard, Paris, is a record of some observations of his friend, Dr. Dusart, published in the *Tribune Médicale*, in May, 1875. The 'subject' was a hysterical girl of 14, whom Dr. Dusart found very susceptible to hypnotism. He early remarked that his passes were ineffective if his attention was not strongly directed to the desired result ; and this suggested to him to try the effect of purely mental suggestion. One day, before the usual hour for waking the patient had arrived, he gave her the mental command to awake. The effect was instantaneous : the patient woke, and again, in accordance with his will, began her hysterical screaming. He took a seat with his back to her, and conversed with other persons, without appearing to pay any attention to her ; but on his silently giving her the mental suggestion to fall again into the trance, his will was again obeyed. More than 100 experiments of the sort were made under various conditions, and with uniform success. On one occasion Dr. Dusart left without giving his usual order to the patient to sleep till a particular hour next morning. Remembering the omission, he gave the order mentally, when at a distance of 700 metres from the house. On arriving next morning at 7·30, he found the patient asleep, and asked her the reason. She replied that she was obeying his order. He said : "You are wrong ; I left without giving you any order". "True," she said, "but five minutes afterwards I clearly heard you tell me to sleep till eight o'clock." Dr. Dusart then told the patient to sleep till she received the command to wake, and directed her parents to mark the exact hour of her waking. At 2 P.M. he gave the order mentally, at a distance of 7 kilometres, and found that it had been punctually obeyed. This experiment was successfully repeated several times, at different hours.

After a time Dr. Dusart discontinued his visits, and the girl's father used to hypnotise her instead. Nearly a fortnight after this change, it occurred to Dr. Dusart, when at a distance of 10 kilometres, to try whether he still retained his power, and he willed that the patient should not allow herself to be entranced ; then after half-an-hour, thinking that the effect might be bad for her, he removed the prohibition. Early next morning he was surprised to receive a letter from the father, stating that on the previous day he had only succeeded in hypnotising his daughter after a prolonged and painful struggle ; and that, when entranced, she had declared that her resistance had been due to Dr. Dusart's command, and that she had only succumbed when he permitted her.

(4) M. Ch. Richet has quite recently communicated to me privately a

record of some recent experiments of the same sort which he has made with M. Janet's 'subject,' Mme. B. On one occasion, early in the morning, he fixed the hour for his trial, 9 o'clock, by drawing a card at random; and found in the afternoon that Mme. B. had been seized with intolerable fatigue and somnolence while dressing, at 9·5. On another occasion he took a quite sudden resolution, and made the attempt from 6·25 to 6·45 P.M.; Mme. B. was entranced at 6·40, after a fruitless effort to ward off the condition by putting her hands in cold water. The full account will shortly be published.

In regarding such distant effects as these, it was of course inevitable, from the first, that an effort should be made to connect them with the similar effects produced by the hypnotiser in the presence of his 'subject'; and in the pre-scientific days of hypnotism this was easy enough. The prevalent view of hypnotic effects, among those who believed them to be genuine, was that they were produced by a specific 'magnetic' or 'mesmeric' force or effluence which radiated from the person of the operator in obedience to his will; and as it is easy to credit unknown agencies with incomprehensible attributes, the idea of this one as able to act at a distance without any loss of intensity was accepted as needing no particular justification. If such a peculiarity prevented the mesmeric force from being correlated in any way with the forces known to physicists, that would appear to its champions as so much to its credit. Not that I regard the idea of a specific hypnogenetic influence of a physical sort as absurd—I shall recur later to the question of such an influence acting within narrow limits of space; and even as regards its operation at any distance and across any obstacles, something might be said for a hypothesis which at least had the merit of recognising the telepathic facts, as long as no alternative was possible. This, however, is no longer the case. A conception which, in its simple and comprehensive form, is of very recent date, and which could never have been educed, free of all confusing elements, from the facts of hypnotism alone—the conception of *thought-transference* — has opened the way for another theory. Not one, indeed—I should most fully admit—for which any certainty or finality can be claimed; it requires assumptions, and depends largely on analogies; but one which, as an attempt at generalisation, reaches, I think, a considerable degree of probability in a region of facts so new and baffling that no generalisation can as yet well aspire to more.

To state my view in the shortest way, I believe that hypnotisation at a distance is truly analogous to hypnotisation in the presence of the 'subject,' but to one particular

form only of such hypnotisation—to wit, that exercised on a 'subject' who has been entranced on previous occasions, by the *suggestion* (either verbal or conveyed by the mere physical proximity of the operator) of the idea of trance. On this view, what happens is that the idea of the intended effect is transferred from the operator to the 'subject,' just as any other idea is transferred when the mind of A affects the mind of B otherwise than through the recognised sensory channels; and that it then works on the 'subject,' whom previous entrancements have rendered hyper-susceptible to its influence, precisely in the same way as the word *Dormez* works on him when addressed by the operator to his ears. That is to say, the trance supervenes owing to the peculiar liability of the 'subject' to react on a particular idea, *in whatever way* that idea may have gained an entrance to his mind, and not owing to any particular magnetic force or compulsion exercised by the operator. I hold, therefore, that the French experimenters have hit on the right word, *suggestion*, to describe the mode of influence —*suggestion mentale* in contrast to *suggestion verbale;* the two sorts of suggestion being in their hypnogenetic power identical, but differing radically in the earlier stage—in the mode in which the suggestion obtains access to the 'subject'. The difference is not then (as formerly conceived) between two modes of propagating 'mesmeric' force, by passes near at hand or 'will' at a distance. It lies quite outside hypnotism and the particular effect of hypnotic trance. It is a difference more radical than those who have believed in mesmeric action at a distance have hitherto imagined, but also less mysterious; inasmuch as this distant influence can now be referred to a large general class of phenomena, fundamentally alike through all varieties of circumstance, and in this way confirmatory of one another.[1] In a word, the difference between verbal suggestion and mental suggestion in hypnotic cases is simply the difference

[1] There is at present this difficulty in discussing any special topic where the ideas of telepathy and thought-transference have to be introduced—that to many readers the terms may convey no meaning, or may appear simply as symbols of what is ridiculous and impossible; while yet it would be hopeless to attempt to demonstrate the realities which they represent in the course of a paper like the present. The largest collection of evidence on the subject which has so far been published will be found in *Phantasms of the Living* (Trübner & Co.), and I am here treating the central positions of that book as if they were solidly established. Feeling, as I do, such confidence to be justifiable, I refrain from encumbering these pages with apologies for it; but I am very far indeed from assuming that every candid mind is bound to share it.

between the two broad classes of communication which exhaust all possibilities of thought-conveyance between man and man, and which may be conveniently distinguished as the *physical* and the *psychical*.

I hasten to explain what I mean by this distinction, which is very liable to be misunderstood, though it would be difficult to express it shortly in any other terms. It is by no means to be taken to imply the absence of a physical basis for the 'psychical' transferences. The word 'psychical' does not involve any hypothesis as to the manner of transference, whether as connected or as unconnected with physical events; it implies simply the fact that particular ideas in two minds have corresponded in such a manner as to lead to the conclusion that they were connected as cause and effect, though the recognised channels of sense have not been employed, and there has been no peripheral stimulation passing from one organism to the other. Now the condition from which we should most readily conclude that there was such a causal connexion between the two ideas is clearly that they should *resemble* one another. When one organism acts peripherally on another—when A hits B, for instance—we connect A's anger with B's pain without requiring to perceive any resemblance between the two affections; but apart from ascertainable physical communication, it would not occur to us to regard a particular idea of B's as due to a particular idea of A's, unless they presented at least some point of identity. And the facts in *Phantasms of the Living* afford, I think, strong grounds for supposing such resemblance to be the general law of telepathic action. In cases of experimental thought-transference the resemblance is obvious and often complete; and the same is true of those 'transitional' cases where the agent sets himself to impress some idea or percept on some one at a distance; while in the 'spontaneous' cases it is rarely that there is a difficulty in tracing the effect on the percipient's senses or emotions to an idea reproduced (though it may be below the level of consciousness) from the agent's mind. This at once suggests the particular character which, *supposing* the psychical transference to be dependent on a physical effect of one organism on the other, that physical effect would naturally be held to possess; it must apparently be of the nature of vibratory energy transmitted through a medium—that being the only means by which changes in one piece of matter are found to reproduce themselves in a distant piece of matter; and its place of origination in one organism and place of operation in the other must be the brain. Whether such a mode of physical

affection exists or not is an open question. The negative answer involves the difficulty that, whenever the psychical transferences occur, a certain nervous process, correlated with the impressed idea in the brain of the recipient, presents a close similarity to a certain nervous process correlated with the impressing idea in the brain of the transmitter, and would not have presented that similarity but for the transmission, while yet the twin processes are united by no physical *nexus*. The affirmative answer involves the difficulty that distance is not known to have any effect on the transmission, which is contrary to what obtains in all known exhibitions of vibratory energy. (Both horns of the dilemma can of course be avoided on the supposition that the accepted view as to the necessary correlation of psychical with nervous events is only a rough approximation to a more complete truth, which the limitations of our view of matter and physical forces keep out of our sight.) But if it exists, this mode of physical affection is at any rate something *per se;* it is remote from any of the recognised modes, to which eyes and ears and nerve-endings are indispensable instruments, and in which the effect on the impressed organism (to wit, certain chemical explosions of nerve- and brain-matter) bears no resemblance whatever, but only a *correspondence*, to the physical facts—visible or audible, or tactile or olfactory—in the impressing organism. And this difference is so radical that, for purposes of terminology, the neglect of the hypothetical physical basis, and the appropriation of the word 'psychical' to transferences where the psychical facts are patent, while no physical fact of any sort is cognisable by our senses or our instruments, seems as defensible as it is convenient.

The above theory has been stated in general outline only, and needs guarding and amplifying in several ways. But I must first pause to consider an objection that may be made to it *in limine*. It may be said that, in opposing the conception of thought-transference, pure and simple, to that of a physical effluence or current of force, operating across indefinite spaces, and neither nullified nor confused by other physical effluences or currents proceeding from other human beings on its route, I have simplified the issue overmuch, and that there is a third possible hypothesis:—namely, that a force is set in operation which is truly psychical, in the sense that it originates in the operator's mind, while its medium of transmission, if it has one, remains unknown and unguessed, but which is different from and independent of any known psychical or physical agency; the ultimate

facts being simply that the distant operator *wills* that the 'subject' shall be entranced, and that in consequence he *is* entranced, without any middle term of mental suggestion or anything else. This hypothesis underlies much that has been written about the relation of will-power to mesmerism; and has been strongly suggested in our own day in much of the language used about "psychic force". It is what Schopenhauer advocated in his description of "the magnetic or generally magical influence proceeding from intentional willing";[1] for he speaks of this will-influence as "*toto genere* different from every other"; and this although he seems to have encountered and fully admitted certain facts of mental suggestion proper, having in the preceding sentence spoken of communicated (telepathic) dreams, and of community of thought between mesmeriser and 'subject'. The view clearly involves nothing less than a complete breach in the physical order. The psychical cause and the physical effect on the organism of another person are as completely disparate as my resolve to kick a chair over and the fallen chair, while no physical *nexus*, parallel to the kick, exists between them. Or rather, since the changes in B's organism, being matters of intimate physiology, are changes which A, who is supposed to cause them, knows and thinks nothing about, what he is supposed to do is precisely analogous to building a stone wall at a distance from where one is standing by an exercise of the will which involves no idea of moving the stones. Schopenhauer, indeed, might be able to conceive this as "an *actio in distans* which the will, certainly proceeding from the individual, yet performs in its metaphysical quality as the omnipresent substratum of the whole of nature". But we are not all Schopenhauers; and those who are unable to reach the substratum of nature with his clue, and to whom even his "will of the world" appears something of a will-o'-the-wisp, may feel the difficulty here propounded in relation to the individual will to be a serious one.

I do not pretend, however, that the theory of "psychic force," as opposed to that of mental suggestion, need be held in this extreme metaphysical form. The distant effect might be referred to A's volition in virtue, not of its "magical influence," but of the cerebration which accompanies it; and either (1) the cerebral events involved in B's trance

[1] *The World as Will and Idea* (Haldane and Kemp's translation), vol. iii., p. 76.

might be held to be directly due, though dissimilar, to the cerebral events in A, or (2) some prior and equally dissimilar cerebral event in B, accompanied by some unknown psychosis dissimilar to A's (*e.g.*, some mood or mode of feeling presenting nothing of the nature of idea), might be assumed as an intervening link.[1] As regards this notion of an unknown psychosis, if *a priori* likelihoods had any application to modes of psychical interaction, one might at any rate feel it unlikely that terminal events so closely related as B's trance and A's desire for B's trance should be causally connected by an unknown psychical state resembling neither; but I should be content to urge that the hypothesis is gratuitous, when we remember that there is one *known* psychical state which is known also to lead on naturally to trance—namely, that *idea* of trance, the unique effect of which can be so completely tested by *verbal* suggestion. But a graver objection—and one which applies to both the above hypotheses alike—lies in the nature of the physical assumption. No doubt, it may be said that anyone who can entertain for a moment the idea of brain acting on brain at a distance has no business with speculative scruples—that, finding himself upon such unknown ground, he need not hesitate to go further, and imagine a complete difference between the physical cause and the physical effect. But even if a needless step were justified merely by being taken in the dark, we should at least observe that this particular step breaks away, not only from the analogy of verbal suggestion, but from the only conception of a physical *nexus* which has in any degree commended the hypothesis of physical communication between brain and brain to scientific minds—the conception suggested by the analogies of tuning-forks, communicated light-vibrations, induced magnetism and induced electric currents.[2] If that con-

[1] A third alternative is possible—that some cerebral condition in A (*e.g.*, a certain initiatory tendency towards trance in himself) is reproduced in B, without psychosis. This would still leave clear my fundamental distinction (depending on similarity of primary effect in recipient to cause in agent) between telepathic communications and all others. But the reasons for regarding psychosis in B as probable are given a little later.

[2] There are, of course, cases where vibratory energy does not reproduce, at the place where it takes effect, the exact form of its source: as where light produces chemical changes. But when it is remembered that the place of origin and place of action of the nervous force now in question are similar pieces of matter—the same in their composition, in their form, and in the energies normally connected with them—the other analogies seem paramount; especially when we remember the electrical character now generally attributed to nerve-currents.

ception have any validity, to conceive that the brain-changes correlated with the desire of A, who remains normally awake, to entrance B at a distance, could directly cause the quite different changes which B's brain undergoes during entrancement, would be like conceiving a struck tuning-fork as able to set into vibration a fork of a different pitch, or the proximity of magnetised iron as able to convert a piece of wood into a magnet. And indeed it is hard to conceive how, if sympathetic action be excluded, one brain should ever get touch or *prise* of the other: it is just the sympathetic response which is the condition of response at all. Why, again, should A's cerebration have more virtue than anyone else's, no idea of him *ex hypothesi* being conveyed? His peculiar influence has been established entirely by a particular association of ideas in the 'subject's' mind; that is the only part of the hypnogenetic process with which his personality is identified; and if such a thing existed as a specific physical power which would enable that part of the process to be skipped, and the 'subject's' brain to be attacked in a new way at some new or lower point, no ground appears why A and A alone should possess it. It must be clear, I think, how different in kind these objections are from those which were admitted as applying, on the physical side, to the conception of mental suggestion or thought-transference. For there, even if we rejected (on account of the distance between the two brains) the notion of a direct physical *nexus*—even if we felt driven to regard the changes in B's brain as immediately conditioned, not by the changes in A's brain, but by the psychical appearance of the idea transferred to B's mind—such conditioning in B would involve only the world-old correlation of psychical with nervous changes in the individual; a correlation which, however variously interpreted, is recognised as universal, or at any rate as the rough expression of some deeper reality which is universal.

So far, then, there appears no very plausible alternative to the view which finds the key of telepathic hypnotism in actual suggestion, conveyed as a transferred idea from A's mind to B's. But this view can be reinforced by a further consideration. As a matter of fact, there is no instance on record (except Esdaile's mentioned before) of a person's being hypnotised from a distance whom the operator has not previously hypnotised by some ordinary process. On the theory of mental suggestion, this is of course just what we might expect. Since a person new to hypnotism has never been hypnotised for the first time by the mere idea of the trance ver-

bally suggested or read of in a book, it would be remarkable if the idea when telepathically suggested were able to take effect on him. But on any theory which excludes mental suggestion, it is difficult to see how the fact of the 'subject's' previous hypnotisation could make a difference; for apart from mental suggestion, he would not be attacked at any special vulnerable point. Such a point consists simply in the idea of entrancement by A (localised in particular brain-changes), which has been specialised and sensitised by association with the actual fact of such entrancement on previous occasions; and in the supposed case, *ex hypothesi*, no idea of entrancement makes its appearance. Now, except when attacked at the vulnerable point, there is no reason why previously-hypnotised persons should be more liable to be entranced than anyone else—the existence of the vulnerable point being simply an explanation of the fact that they *are* so liable. Thus, to take another case, if a strong man has felt giddy and has tottered when standing over the brink of precipices, the idea of standing over a precipice may afterwards make him feel giddy and totter; but he is not more given than other people to tottering when walking across the room, and would oppose as much resistance as other people to an external push. Just so, apparently, should previously-hypnotised persons oppose as much resistance as their neighbours to the supposed push or compulsion of an external will, or to other telepathic influences which differed in character from any to which they had previously yielded; so that the confinement of the hypnotising effect of such influences to that particular class of persons would need fresh assumptions to explain it.

We may now proceed to examine the hypothesis of mental suggestion at a distance a little more in detail. First, what are we to suppose the contents of the transferred idea to be? The answer will naturally be found by examining the contents of the idea which is found to be hypnogenetically effective when suggested through the recognised channels of sense, in the presence of the 'subject'. And it at once becomes evident that something more than the mere idea of trance is included. That idea might be suggested by reading a description of a hypnotic experiment in a book; it has often been suggested when hypnotic phenomena have been described and discussed by persons in the same room with the 'subject'; but in such circumstances it has not been found to produce any effect. Is the additional condition, then, that the idea shall be suggested with some show of authority or insistance, as in the tone of the word *Dor-*

mez? But let someone who has not prievously hypnotised the subject pronounce such a command as authoritatively as he likes, and no hypnotic result will follow. I would not indeed venture to assert that it is impossible that trance should be thus induced in an extremely sensitive 'subject'; but I cannot discover that it ever *has* been so induced. The necessary condition then seems to be that the suggestion or command shall come from the original operator; that is to say, *rapport* is involved—at any rate to the extent of memory of a past relation between the two parties. But here there seems, at first sight, a certain difficulty in connecting the near (or physical) with the distant (or psychical) suggestion. In the former case the idea of the operator in the 'subject's' mind, and a sense of the past relation with him, is practically ensured by his actual presence and voice; the 'subject' cannot help associating the command, when it comes, with the person who gives it. But when the two parties are separated, and the command is telepathically conveyed, there is nothing to connect it in the 'subject's' mind with the person who transmits it, unless an idea suggestive of that person is simultaneously transmitted. Now among the recorded examples of hypnotisation at a distance we do undoubtedly find a certain number where such an idea seems clearly to have been transmitted, since it unmistakably appears in the 'subject's' consciousness. This was the case with Mme. B., who was able to distinguish whether it was Dr. Gibert or Prof. Janet who was affecting her; and the occasion when Dr. Dusart's 'subject' was conscious of his inhibitory influence may fairly be referred to the same class. But in other cases the trance-condition supervenes without any conscious occupation of the 'subject's' mind with the person who is influencing him. We might even go further and say that it supervenes without even the idea of *itself* being presented as an obviously separate and prior condition. We cannot, as in cases of verbal suggestion, point to the moment when the idea obtains lodgment in the mind, and trace its effects from that moment. The consciousness of the idea, so far as it exists, is indistinguishable from the general mental condition of on-coming trance.

Now as regards the mere fact that the mental suggestion is truly transferred, even in the cases where the recipient is not conscious of it, a proof of the strongest kind is afforded by the cases where he *is* conscious of it. It seems almost inconceivable that experiments in telepathic hypnotisation which agree in every point except this of the 'subject's'

consciousness should involve radically different processes. But if we look a little deeper, this special point—the effectiveness of an idea which does not make any separate and distinct impression in consciousness—will probably not be felt as an objection to the theory of telepathic suggestion by anyone familiar with the phenomena of telepathy in branches unconnected with hypnotism; I might almost say, to anyone familiar with the phenomena of mere automatism—since the production by automatic writing of words and intelligent sentences, which the writer himself has afterwards to read in order to learn what they are, is a sufficiently well-recognised phenomenon. But in such cases it can scarcely ever be proved that what is written is originated, at the moment, by any specially directed mental activity; the ideas belong, perhaps, to the vast crowd which have had a previous existence in the mind, and have left their impression on the brain, and it is merely owing to some accident of cerebral circulation or chemistry that the impressions belonging to the particular ideas which appear in the writing were revivified at that particular minute; a minute later, and it might be the turn of others to be similarly revivified. We must have recourse, therefore, to telepathic experiments—where the idea is then and there transferred from another mind—for the requisite proof that a new idea, conditioned by something other than the spontaneous workings of the brain, may produce marked effects without making any appearance in its receiver's consciousness. Experiments yielding this proof have not, so far, been numerous—it must be remembered that deliberate telepathic experimentation is in its veriest infancy; but I am content to rely on those recorded in *Phantasms of the Living*;[1] and especially on the remarkable series carried out by the Rev. P. H. Newnham and his wife, where a very large number of questions mentally put by him were relevantly answered in writing, produced by a planchette on which Mrs. Newnham's hand was laid, without her having an idea, in any case, what the question or the answer was. The production of hypnotic trance by an unconscious idea[2] can scarcely be held to be a more extreme instance of "underground" mental activity than this.

[1] See vol. i., pp. 63-79, 84, and vol. ii., pp. 670-1.

[2] It is difficult to avoid this expression, but I of course do not mean by it mere 'unconscious cerebration'. My whole view of telepathic transference is that it is a *psychical* event—with a physical side possibly, but psychical certainly; consequently the idea transferred, in this as in every other case, must have complete psychical reality. In calling it unconscious,

This argument naturally applies equally to both the ideas which we have supposed to obtain a lodgment in the 'subject's' mind—the idea of trance, and the idea of the distant hypnotiser. But as regards this latter idea, there is a further difficulty. For it may be said, and probably with justice in most cases, that the mind of the hypnotiser himself is not consciously occupied with the idea of himself; he is concentrating his thoughts on the 'subject' and on the effect which he desires to produce, not on his own personality, or his own unique relation to the 'subject' as the source of the effect. And we cannot at once answer this objection by the assumption that ideas may be telepathically propagated from an unconscious part of the transmitter's mind, just as they may take effect in an unconscious part of the recipient's mind. For supposing the transmitter's mind to include an 'unconscious part' which is more than a mere general name for the legion of past ideas that are now all alike latent and revivable—an 'unconscious part' where positive activities are possible, and one idea can take precedence of others, just as in the conscious part,—we still need some reason for the activity and prominence assumed, seemingly, by this particular idea of himself, just at the moment when it suits our theory that it should come to the front. Readers of *Phantasms of the Living* may recall that the same problem presented itself in respect of a large number of the cases of 'spontaneous telepathy' there recorded, where an idea of the 'agent' was most vividly presented to the 'percipient' (often even externalising itself as a hallucination of the senses), while yet the 'agent's' mind at the time was presumably not dwelling on himself or his appearance, and indeed was sometimes not ostensibly dwelling on anything at all, being in a state of lethargy or coma. This fact may seem clearly to separate such spontaneous cases from the other class, including the majority of cases of experimental thought-transference, where the definite idea on which one mind is concentrated is reproduced in the other; and in a criticism of the telepathic theory which appeared in MIND ix. 607, it was not unreasonably suggested that the differ-

therefore, I am, for convenience, confining the meaning of 'conscious' to the mode or plane of ordinary human experience—in which we may surmise the true consciousness of the individual to be only partially manifested. The facts of telepathy drive us, I think, to conceive a segregation of conscious states more pronounced than that which examples of double or alternating 'consciousness' had previously suggested; and before long philosophy may probably find one of its chief battle-grounds in questions as to the existence and nature of their underlying unity.

ence was so radical as to make the inclusion of the two sets of facts under a common conception decidedly difficult. I fully admit this, if the conception is to be a *physical* one: I admit, that is, the difficulty (which better knowledge might overcome) of formulating a theory of 'brain-waves' which should make it seem as natural that B should receive a telepathic impression of A, who is thinking of other things or not thinking at all, as that B should receive a telepathic impression of a card on which A is painfully concentrating his attention, or of a scene which engages A's eyes at the moment when he is passing through a crisis of emotional excitement. But until physics and physiology can offer some explanation of the former fact on its own account, I do not think that their failure to supply an obvious ground of connexion between the former fact and the latter is a reason for doubting the reality of a connexion which on psychical grounds is strongly suggested. And keeping to the psychical aspect, we may say that the idea of self is an altogether exceptional one, occupying, even when it is not prominent, a permanent place in the background or middle distance of consciousness; and that the idea of its corporal embodiment—*i.e.*, of that expression of it which is almost inevitably represented in other people's ideas of it—is associated more or less closely with a vast number of the items of thought and feeling which make up everyone's daily experience. Nor does the hypothesis of a wider self, embracing planes or stages of consciousness beyond the consciousness of normal experience, involve anything which would affect this exceptional position of the idea of self; for the segregation of conscious states which that hypothesis supposes, in no way involves a disruption of individuality; and the pervading sense of association with an objective organism may perfectly well be common to all the states. It cannot then, I think, seem very surprising if those special mental activities which at special seasons condition a telepathic transfer—whether at the approach of death, or in the shock of sudden danger or excitement, or in the concentration of attention and will necessary for an experiment in distant hypnotising — are accompanied by a special self-realisation, a true quickening of the idea of self, even though that idea does not detach itself on the plane of consciousness which limits our ordinary conception of personality.

I am aware of the risk of paying one's self with words in such speculations; and I specially recognise the danger of physical analogies, such as I have just used in the word *plane*. Modes of expression derived from a known order of facts

can never really seem explanatory of a novel order till their connotation has grown—that is, till the novel order has ceased to be novel; and meanwhile pseudo-explanation is only too easy. But the phenomena of telepathy are there, and, however much hidden from our sight, the process of causation must be there also; and some indulgence may be claimed for a hypothetical picture of that process which is confessedly crude, as long as its crudeness is the result of an attempt to make its elements distinct. Now, the notion of segregated departments of mental life, of which a more complete intelligence can perceive the unity, is not an indistinct notion, though probably it very imperfectly represents the facts; and if it has any truth at all, then 'plane of consciousness' has a true psychical meaning, and is more than a slippery metaphorical phrase. And if the plea of necessity will excuse the use of *physical* terms, so, I think, will it excuse the use of *metaphysical*, in spite of a certain awkwardness in the actuality suddenly given to somewhat recondite notions. For in truth the problems which telepathy presents lie on the borderland of psychology and metaphysics; and in attacking them psychology has to trespass, or rather to make distinct claims, on the metaphysical territory. It finds itself driven, by the facts under observation, to tie down to actual individual cases ideas—like those of unconscious mind and of a transcendental self—which have dwelt so continuously in the misty heights of purely abstract reasonings, that they present an odd, incongruous appearance when brought to earth. The "philosophy of the unconscious" is shy of adapting itself to the unconscious part of Mr. A.: it seems hardly worth while for the 'self' to be transcendent, if all that it is to transcend is the ordinary phenomenal consciousness of Madame B. Yet, Mr. A. and Madame B. are types of humanity; and in examining the bond which unites them, we are really on the traces of an idealism which is metaphysical enough in all conscience, as pointing to a potential unity of all similarly constructed minds, but which is nothing if not concrete, and a key to nothing except immediate facts of individual experience.

(To be continued.)

IV.—THE LOGIC OF CLASSIFICATION.

By Rev. W. L. Davidson.

Classification is nearly allied to Definition, and, in practical application, the two processes are apt to run into each other. Thus, in changing the meaning of a well-understood word, a reference to a wider range of objects than were formerly denoted may be the distinctive feature, as much as a fresh analysis of the particular notion. Take as an example the word 'concrete,' and compare its Hegelian signification with the commonly-accepted English use, or compare the evolutionist's 'good' with that of the intuitional moralist, and it will be found that *denotation* is a potent factor in the explanation of the difference. Denotation, on the other hand, is not the sole principle that determines Classification. On the contrary, wherever you have a hierarchy of classes, or any approach to it, you have a distinct reference to *connotation*, and the graded system has no meaning except when interpreted as expressive of the inverse ratio of comprehension and extension.

This the formal logicians, to the extent that they recognise the two processes at all, have unquestionably seen,—although they do not explicitly state it. Hence their treatment of Definition and Division in immediate connexion with the Five Predicables; and hence such a fact as this—that a tractate like Boëthius's *De Definitione* is in great measure one also *De Divisione*, while his tractate on Division is in reality one on Definition. Hence, further, the fact of the impossibility of keeping Fallacies of Classification—such of them at any rate as are concerned with the grouping together of things that have only unimportant points of similarity—in entire separation from Fallacies of Definition, so far as concerned with the ambiguities of language. It is notorious that we may equally well explain an *equivocal* term as one that is ill-defined or as one that represents a badly-formed class: denotation or connotation equally gives us the characteristic.

By Classification are understood two things—(1) the *formation*, (2) the *location*, of classes. The second process implies the first, but the first may stand alone without articulate reference to the second. Both, however, proceed upon the same principle of marking agreements and differences, of

placing like with like and keeping separate things that are dissimilar ; but it is in the second only that the idea of gradation comes in, and so the conception of higher and lower in generality. Thus, the letters of the alphabet, as they stand in the order familiar to us all, are unclassified. There is no reason why A should precede B, or B should be followed by C : we might equally well begin with B as with A, with M or with P, as with either ; and but for the matter of habit, a " beta-alph " would be as appropriate as an " alpha-bet ". We proceed to classify only when we group distinct letters together, on the score of their possessing some striking peculiarity in common ; as when we pick out the vowels from the consonants, or when we form classes of labials, dentals, liquids and so forth. Not yet, however, have we reached the full sense of classification. This would be attained only if we could arrange the groups of letters on some distinct plan, so that each group should be seen to occupy its own proper place, and to have definite relations to all others around it. Speaking strictly, we form a class when we bring together a collection of individuals held in union by the bond of one or more points of community, and when we take care that nothing that is destitute of the point or points of community is admitted into the class : we classify when we arrange classes thus constructed on the principle of higher and lower, wider and narrower. Hence, Classification naturally assumes the form of a series of grades. We ascend from the lower to the higher, or descend from the higher to the lower, in a continuous order ; and the relations that obtain between groups are those of subordination, superordination and co-ordination. One group is subordinate to another when it is contained under that other as a part of a compound whole, whose mark it possesses but which has in addition distinguishing characteristics of its own. One group is superordinate to another when it is regarded as the higher under which the other takes its place as lower. Two or more groups are co-ordinate when they stand upon the same level or occupy positions of equal authority—such as Orders of different Classes, in botany, or Genera of different Orders. And if we ask what is the full signification of this classifying process, we find it is simply this—that the different groups have different degrees of generality, and that the greater the generality the less the meaning conveyed, while the less the generality the richer the meaning. Thus, we take the grade ' Class ' in the botanical grouping. This is a division very high in the scale, and includes an enormous number of sub-divisions

under it—sub-class, cohort, order, &c.: and from the very circumstance that it stands thus high—in other words, from the fact of its great generality—it can only give us a very few attributes (five at most) characteristic of the whole mass of included particulars,—and this not without striking exceptions. But let us go a step or two lower down, let us take the 'Order'; and what do we find? We find that, by descending, we have reached a narrower grade; and by this very fact of narrowing the grade—in other words, of reducing the number of included members,—we find we have increased the number of things we can predicate concerning these members, so that the characteristics that go to form the Order-mark are far more numerous than those that go to form the Class-mark. And so with the other grades as we descend: until at last we reach the Species (the unit of Classification, as the Individual is of Definition), where we have the minimum of extension with the maximum of meaning; for the species, besides exhibiting the characteristics of the various grades above it, has numerous features peculiar to itself. In this way, we see at once the principle of the whole process. It is:—The wider the group, the greater the number of included members, but the less the meaning conveyed respecting each member; and conversely. And the utility of the process consists in this:—(1) that it throws intelligibility into a mass of materials that might otherwise remain unmanageable and incomprehensible, and is thereby an aid to knowledge; (2) that it helps the memory,—more especially in cases of enormous complication (such as we have in zoology and botany), where nothing would answer but a regular graded system of great perfection, group rising above group like the rounds of a stupendous ladder; (3) that it facilitates the discovery and display of laws of coexistence. And this holds of all classification that is worthy of the name. We usually confine it to the Natural History groupings: but it is equally true (though less conspicuously) of every grouping, of whatever materials, that is done upon a scientific basis—from the classifications of things in ordinary life with a view to action, to the high abstract classifications of the sciences, where theory in great measure supersedes practice.

This being so, it may not be amiss to inquire into the principles that govern scientific classification, and how far, under the most favourable circumstances, they can carry us.

I.

The first may be formulated thus:—That our plan of

grouping proceed upon a *rational* principle; by which is meant a principle the opposite of frivolous,—the test being that it yields us luminous results.

It is possible, no doubt, to bring together things or to arrange objects in a vast variety of ways; but when the arrangement is based upon mere fancy or simply follows our caprice,—when it is absurd, ridiculous or grotesque,—it is not, in any proper sense of the word, a scientific operation, and cannot claim consideration at our hands. Before it is anything beyond a mere exercise of perverted ingenuity, it must disclose a guiding and illuminating plan—one that throws real light into the particular collocation.

We may take as an illustration the astronomer's arrangement of the stars into constellations. Nothing may, at first sight, appear more arbitrary or more superficial. It requires a considerable stretch of the imagination to discern Orion or Auriga or Boötes in the groups that bear these names, while even Perseus and the Greater Bear are by no means self-evident impersonations. Yet these various clusters, although the naming of them and the conceptions attached to them may be entirely fanciful, serve a very high purpose in throwing method into the seemingly chaotic, and in disclosing numerous valuable correlated facts. Take, for instance, the bright star in Orion called '*a* Orionis'. The very fact that this heavenly body is designated a 'star' gives us, of course, a certain amount of information: it is thereby shown to be differentiated from planets, comets, &c., and justifies us in predicating of it two things—scintillation and apparent immovability with respect to other stars. The further fact that it occurs in Orion adds still more to the signification; for Orion is the most striking constellation in the heavens, and occupies a certain definite relation to the Hyades, the Pleiades and other surrounding bodies. When further we know that it shines on Orion's right shoulder, we have intimation of its exact sidereal position; while, being a star of the first magnitude in that position, it is known to form with Procyon and Sirius an equilateral triangle of remarkable brilliancy and beauty. More would be connoted by it still, if we allowed ourselves to leave the purely astronomical ground and to take account of human superstitions and traditions. The very name Orion would carry us back to the days of ancient Greece, and might suggest to us much as to Greek mythology and the connexion of the early Greeks with astronomical studies; or we might take the Semitic name Chesil (*fool*), and then we should be reminded of the fate and story of Nimrod "the mighty hunter". But,

nomenclature apart, the grouping itself is astronomically useful; and, as it accomplishes the threefold object of aiding the understanding, of displaying coexistences and of helping the memory, it must be pronounced satisfactory and scientifically unimpeachable.

Again, take an easy instance from Botany. The full classifying scheme of the Natural History sciences will be considered later on; but, meanwhile, let us illustrate the one point of a luminous principle from the well-known Knotgrasses. Besides other modes of arrangement, a group of these might be formed so as to disclose a serial development in one particular part—the flower. At one end would stand Common Knotgrass, with abundant sessile flowers, clustered in the axils of nearly all the leaves on the stem; at the opposite extreme would stand Persicaria, with its short dense terminal racemes. Between the two would come Climbing Knotgrass and Copse Knotgrass, each possessing the axile floral cluster of Common Knotgrass and the terminal raceme of Persicaria: each, too, with the flower coloured like that of Common Knotgrass (*viz.*, green, with a white margin), but with the *lustrous* seed-vessel of Persicaria. Here we have an obvious evolution of parts—which the mere placing of the groups in this relation serves exactly to bring out.

So, too, with the three popular species of Primroses—Common Primrose, Oxlip and Cowslip,—which, when arranged in this order, show a marked gradation in two separate points, the leaf and the flower. The leaves, although all agreeing in being wrinkled and toothed, are easily distinguished by their difference in shape. The flowers are even more sharply differentiated. Those of the Common Primrose are solitary, borne upon longish slender pedicels, which rise apparently direct from the root-stock, having the corolla of a pale yellow colour, with broad flat limb and contracted throat with thickened folds. Those of the Oxlip rise from the root-stock in clusters upon a short stem or peduncle, with corolla of a pale yellow colour, but limb concave, throat open and destitute of folds. Those of the Cowslip are also clustered, but upon longer peduncles; have corolla small, funnel-shaped and of a buff-yellow colour; limb cup-shaped; throat open, with folds obscure. The grouping is obviously instructive, and possesses systematic and scientific value.

Once more, let us take the books in a library. These, clearly, might be arranged in several useful ways. They might be grouped according to the subjects of which they

treat, or they might be grouped according to the language in which they are written, or they might be grouped according to the names of the authors alphabetically arranged. Each of these systems might plead a certain value, for even the last of them might conceivably bring out curious and practical statistical results. But we should hardly regard as legitimate any arrangement that proceeded on the mere colour of the bindings, or the number of letters in the authors' names, or the year in which the treatises were published, or the number of pages or of sheets that they contain. The very idea of a Library (as distinct from a mere place for storing books) excludes such arrangements and brands them as ridiculous or capricious.

In like manner, we may arrange the higher animals according to their nervous system or according to their intelligence ; but if we selected such an attribute as hairiness as the basis of our classification, we should lay ourselves open to the charge of arbitrariness or frivolity.

From this it will be seen what an arbitrary or frivolous classification really means. The arbitrary and the frivolous include not merely the fanciful and capricious, but also the accidental in all its forms,—more particularly as the inconstant. It is accidental to a book what the colour of its binding or the number of its pages is ; and hairiness is a variable attribute among animals, differing even among individuals of the same species to almost any extent. No merely individual trait, no variable feature, no simple accident, can afford a rational basis of classification ; and all groupings that proceed upon one or other of these must be pronounced trifling and unscientific.

Now, it is exactly from being based upon a trivial principle that many classifications, which from a purely formal point of view would be otherwise unimpeachable, are unsparingly condemned by the scientific classifier. It must be carefully noted that pure logical Division and Classification are not, in their whole length and breadth, coextensive. On the contrary, it is sufficient for a logical Division,—(1) that it be exhaustive, (2) that the parts be severally less than the thing divided, and (3) that the principle of Division be such as to secure that the parts be mutually exclusive. But what the character of the principle of Division itself is, beyond this fact of mutual exclusion, does not come within the ken of the formal logician. So that, when the formal logician adds to the three foregoing rules this fourth,—*viz.*, (4) that the principle of Division be important and essential,—he does so by a sound enough instinct, but quite inconsistently with his own conception of the nature and scope of Logic.

The point, then, to be insisted on at this stage is,—that, in order to a proper grouping, there must be a rational or light-giving principle; and that wherever you have this, you have to that extent a satisfactory classification, and wherever this is wanting, you have no classification of any scientific value.

II.

Classification would be a comparatively easy affair, if it demanded nothing more than regard to this simple rule of seeing to it that the grouping is of a light-giving character. Unfortunately, classification is frequently a much more difficult operation than could be satisfied by this simple canon. Not seldom there are competing principles even within the limits of the light-giving; and these competing principles clash. Where this is so, the rule to be followed is:—Arrange the groups so as to bring out the greatest amount of information, having regard to the materials manipulated and the end in view; in other words, classify upon the greatest number of correlated properties.

We may begin with the simple case of the archæologist and his Relics. Simple as this case is, it shows several complications. For, in arranging the relics found in a primitive habitation—say a lake-dwelling or a cave—the archæologist has more plans than one open to him; though, when you consider the nature of his science and his leading object, there is one that is pre-eminently suitable. He might, for instance, accept the commonly-recognised division of Nature into the three kingdoms of mineral, plant and animal, and arrange his "finds" according as they fall under one group or another. As, however, one of his chief ends is to determine traces of man in the non-historic times, and to ascertain his habits and intelligence, the range of his acquisitions and the stages of his advance in civilisation, he finds that this ground of classification does not throw the full light upon his subject that he would desire, or give him the revelations that it is possible to obtain; and so, if he be wise, he discards it as a main basis of grouping and has recourse to another which pays regard to the *utilities* of the objects under consideration. Accordingly, he arranges his relics in two leading divisions—*viz.*, (1) relics that have been things of *use* to man, (2) relics that are simply *remains;* employing the *material* of which these relics consist only in his minor subdivisions. In this way, bones, for instance, whether human or animal, come under the second division, if they are simply remains; but under the first, if they bear evidence of

having been used for domestic or other purposes,—if, *i.e.*, they have been obviously made into *implements*. Under the first head, too, would come all inorganic objects that bear the marks of human workmanship upon them. Then, after utilities, would come the material out of which the useful articles were formed—stone, bone, horn, wood, &c.; but only in a subordinate position. Thus does the archæologist make the most of his subject; for thus is indicated to us in any given case, not only that we have here an object that has come down to us from the past, and that may be identified by us—the horn of a deer, the trunk of a tree, the tusk of a boar, &c.—but, further, that in this object we have something told us about man's past ways and habits: the tree is formed into a canoe, the deer's horn into a pick or club, the stone into an axe or hammer. And there is also indicated, through the subdivisions, the particular number of kinds of article that each material was used for: bones being formed into needles, pins, knobs, combs, &c.; stones into hammers, axes, clubs; clay into pottery of various sorts; and so forth. So that, even in classifying Relics, there is a better and a worse method; and that method is best which sheds the greatest light upon the collection, which displays best the correlated properties among the objects, and which thereby furthers best the end or object that the science of archæology sets before it.

The same rule is applicable to the grouping of the various Meanings of a word, where these meanings are numerous and of real significance. Let us take the philosophical term Dialectic, and see how the principle works. The significations here might be arranged in various ways, and each way has its own recommendations. We may follow the *chronological* order—*i.e.*, we may take up the great names in philosophy and set down the sense in which each used the term from early times down to the present day; or we may throw the meanings into logical groups apart from the chronological sequence. The chronological order would be the best if it were also the order of evolution,—*i.e.*, if each successive meaning were a distinct development of that which preceded it,—and if there were no overlapping in the significations. But, unfortunately, neither condition is complied with. There is no steady advance as the ages pass, but the usage of a later age, as one comes down the stream, frequently reverts to that of an age long prior, and more than one signification is current at a particular time. Thus, if we place the authorities in chronological sequence — Socrates, Plato, Aristotle, the Stoics, &c.; Cicero, Cassiodorus, Boëthius;

Isidorus, Alcuin, John Scotus Erigena, Petrus Hispanus, &c.; Hegel and certain moderns—what do we find? We find Aristotle assimilating himself to Socrates, and Hegel to Plato, and the Latins reproducing Aristotle or else running several significations alongside each other. We are, therefore, thrown upon the logical arrangement. This would probably gather up the meanings into three groups as follows:—(1) Those that express a mode or method of attaining truth, together with a mental discipline; (2) those that set forth the nature, the movement or the progress of truth itself; (3) those that designate a branch of science. Under the first head would come—(*a*) Socrates's cross-examination, or the clearing of people's notions by putting them through a series of interrogations, which, by first opening their eyes to their own ignorance, prepared the way for the discovery and reception of the truth (really, therefore, a species of Inductive Defining); (*b*) Aristotle's "dialectic," as described in the *Topica*,—confined to the sphere of Opinion or the probable, in contradistinction to Demonstration; (*c*) the "disputation" of the Schoolmen,—by means of question and reply, interrogation and response, examination of proof and counter-proof. To the second head would be assigned—(*a*) Plato's theory of Ideas, and (*b*) Hegel's movement of the Idea in the course of its expansion and development, in the threefold form of "affirmation, negation and the union of the two," "thesis, antithesis and synthesis," "identity, difference and combination". Under the third head would be placed—(*a*) the early Latin and Scholastic conception of Dialectic, which identified it with what we should now-a-days call Logic (although that term was formerly applied to Rhetoric as well, and was sometimes extended also to Grammar), and (*b*) that other Scholastic usage, which made Dialectic synonymous with "the pursuit of all the liberal arts".

Turn, next, to the Classification of the Sciences. If we go back to early times, we find the division current into Theoretical and Practical. This classification had certain obvious uses, and the convenience of it is attested by the fact that it is still in force, for general purposes, at the present day. But, obviously, it cannot plead the merit of being a strictly logical division; for many sciences are both theoretical and practical, and it would be equally legitimate to place them in the one division as in the other. Faulty, however, though it be in this respect, it is perfection itself as compared with the next great historical classification—that of the Stoics. The Stoics were above all things moralists, and everything they viewed from the ethical standpoint. They grouped the

Sciences, therefore, according to *dignity* or *worth ;* and, placing Ethics at the top, they descended from it, through Physics, to Logic. It is difficult to say whether the principle adopted or the limited number of the sciences recognised is the more naïve feature here ; neither does much credit to the remarkable sect that gained its philosophical reputation in the fields of Ethics and Logic, and neither had any general influence in the history of philosophy. The first notable attempt at a classification is in connexion with the Seven Liberal Arts. This, probably, dates far back ; but it comes into prominence for us with the Latins of the fifth and sixth centuries of our era,—more especially with the Roman philosopher and patrician Boëthius. Boëthius not only exhausts the circle of the sciences (in so far as recognised in his day), but consciously classes them upon the principle,—Begin with the primary and fundamental, and go on from that to the dependent and derived. We have not indeed from him a detailed handling of the whole of the sciences,—*trivium*[1] and *quadrivium* both ; but, in sketching the latter, he does so in the determinate order—Arithmetic, Geometry, Music and Astronomy,—and supplies us with his reasons. Some of his reasons are curious enough, and smack of Plato and Pythagoras ; but others of them are far more than mere historical curiosities. Thus, he says that, of the four mathematical sciences, Arithmetic comes first, because the destruction of what is prior in nature means the destruction of what is posterior, whereas the posterior may perish without the prior being affected. " Take away numbers, and whence do you get the triangle and the square and the other figures of geometry—seeing they are all denominative of numbers ? But take away the triangle and the square, and indeed the whole of geometry, and three and four and the names of the other numbers will not disappear. . . . In like manner, musical modulation is denoted by names of numbers." So too with Astronomy : geometry, music and arithmetic are all presupposed here. Moreover, " Motion is subsequent to rest, and rest is the prior in nature. But astronomy is the science of the movable and geometry of the immovable, and the very motion of the stars obeys the laws of harmony."

Now, vast as has been the extension of the circle of the sciences in modern times, and great though the difficulty be in establishing the precise character and place of each, it is something noteworthy that the main principle on which the

[1] This word is not Boëthius's, but appears to be a barbarous coinage of the seventh century.

leading classifications of the present day are founded is precisely that which guided the veteran statesman and philosopher in the days of Theodoric the Goth. They amply recognise the necessity of commencing with the fundamental and the simple, and of leading onwards, by successive steps, to the dependent and the derived. In carrying out this notion, they present us first of all with the abstract and next with the concrete sciences; and, in enumerating the branches of each great division, they endeavour to pay due regard to the mutual dependence of the included members. That which is self-sustained or independent comes first; next comes that which presupposes the principles of this non-dependent science; then that which requires for its elucidation the principles of both these; then that which implicates a knowledge of all the three; and so on. So that, among Abstract sciences, Mathematics is the primary, —relying upon none more fundamental than itself, but giving support, to a greater or less extent, to all the others; then comes Physics, then Chemistry, &c.; while, among the Concrete sciences, Mineralogy—as implying mathematics, physics and chemistry — precedes; Botany and Zoology follow — implicating vital and physiological facts; and so forth. It is all a matter of reasonable sequence: and by thus pursuing the order of dependence and of complexity the most luminous arrangement is obtained, and the grouping itself becomes highly philosophical.

But the great sphere for competing principles is the field of the Classificatory sciences. Both in Zoology and in Botany, where the details are something enormous, it would be strange indeed if only one system were light-giving. Several systems can claim consideration: and the great point is to ascertain which can best bring out the affinities and resemblances; and this is determined when we have found which classifies according to the greatest number of important characters.

This introduces us to the distinction between the Natural and the Artificial systems of classification,—a distinction, however, that is not peculiar to the Natural History sciences. It is in reality that which we have already drawn between a *rational* and an *arbitrary* or *frivolous* grouping. The peculiarity of the case lies here—that, from the character of the facts manipulated, that system which is known as Artificial is not in any strict sense of the word altogether arbitrary, but must be to a considerable extent also "natural"; while the system denominated Natural is also to a considerable extent "artificial".

I do not indeed say that a system could not be formed, or has not been formed, to which the word *arbitrary* might not be strictly applied. On the contrary, when Theophrastus divided plants into trees and herbs, "referring the larger shrubs to the former, and undershrubs to the latter," he used a principle of division (namely, *size*) which cannot be designated as other than frivolous—notwithstanding that it long kept its ground, being accepted so late as the beginning of last century by Ray in our own country and Tournefort in France. And much the same may be said of Pliny the Elder's grouping of animals according to the *element* they lived in: those that fly in the air (*volatilia*), those that live on the land (*terrestria*), and those that swim in the water (*aquatilia*). But the Linnæan system (which is that commonly known as Artificial) differs from the Natural mainly in *degree;* and the accurate plan would be to drop the designations "natural" and "artificial," and to replace them by the terms "more natural" and "less natural".

What, then, is the distinction between the Natural and the Artificial so-called; and how can the former legitimately claim the pre-eminence? This question will be answered by referring to the objects that biological classing has in view. In the first place, it has all the objects of classification in general—*viz.*, helping the memory, aiding the understanding and displaying coexistences. But, in the next place, it has the peculiarity of dealing with *living* beings and of aiming at presenting these in the mutual relations that they actually bear in Nature. Now, in order to do this, it is not sufficient to rest content with mere superficial resemblances, but we must go deep down and fix upon those that are *significant* and *important:* and the test of importance and significance is, that they are *constant* and *prolific of correlated properties.* It is the main objection to the Artificial system that it fails in this respect, or fails to a far greater extent than the Natural system does. It is too ready to proceed upon the more obvious and easily ascertainable points of animals and plants, and it does not make the fact of correlated properties a prime consideration. Notwithstanding its one great recommendation—*viz.*, that it facilitates identification—it is deficient in the very points that are most imperative; and its leading principle of arrangement—*e.g.*, in Botany, the number of stamens and pistils—lands us in *natural* groups only, as it were, by accident and very occasionally.

Let us take as an example the classifying of Animals. In the Linnæan system, the classifying organ that determined

the highest divisions was the *heart*. Linnæus, accordingly, grouped thus :—

Heart, 2 ventricles, 2 auricles ; blood—warm, red.	{ Living young, I. Mammalia. Eggs, II. Aves (Birds).
Heart, 1 vent., 1 aur. ; blood—cold, red.	{ With lungs, III. Amphibia. With gills, IV. Pisces (Fishes).
Heart, 1 vent., 0 aur. ; blood—cold, white.	{ With antennæ, V. Insecta. With tentacles, VI. Vermes (Worms).

Now, as is well known, the heart is a very variable organ, and so is not well suited to give the great differentiating mark in the animal kingdom. It does not make the most of correlated properties, and it necessitates a great overlapping of classes. Later naturalists have, therefore, discarded it, and have given the place of honour to *the nervous system*. In this way they have been able to mark affinities and to display gradations to a far greater extent than ever Linnæus could, and to bring their classification nearer to what they conceive to be the ideal *natural* system,—although there is yet much to be done before perfection is attained. By fixing on the nervous system as their chief classifying organ, they have fixed upon something that is of the highest scientific value. For what determines the value of an organ for classifying purposes? The number of properties that it carries along with it. Presence of a nervous system, therefore, means many things. It means, in the vertebrates, possession of a brain and spinal cord, shut out in a special cavity from the general visceral tube of the body, and situated opposite the side on which the limbs are placed. It means possession of an internal skeleton, as opposed to the exoskeleton of such invertebrates as the lobster and the crab. It means possession of limbs jointed to the body, and always turned away from the nervous masses ; and these limbs never more than two pairs. It means possession of a heart (except in the case of the lancelet), as well as of a blood-vascular system, and blood (with one exception) of a red colour ; together with the peculiarity that the masticatory organs are " modifications of parts of the walls of the head, and are never modified limbs or hard structures developed in the mucous membrane of the digestive tube as they are in the invertebrates". It means, lastly, increase in intelligence, advance in mental endowment, the degree of advance depending on the size and weight of the brain, but still more on the brain's texture and convolutions. So that the Natural system has this great advantage over the Artificial that it is truer to the principles of natural science and of scientific classification in general ; it is more fortunate in

facilitating the grouping of members according to their greatest number of real affinities and of fixed resemblances.

III.

But now a difficulty arises with respect to Biological grouping, yet not by any means confined to it,—a difficulty real and very perplexing wherever we have a complicated classification to deal with, and whatever be the materials in hand or the sphere of operation. No member of a complex system can have *all* its relations expressed by being placed in any one position in a linear scheme, however carefully located. While you may succeed in showing its connexion with those immediately above it and those immediately below it and (where you have a graded system involving co-ordinations) with those immediately around it,—you cannot exhibit its many resemblances to distant and seemingly unconnected groups, or exhaust its points of affinity or dependence. Hence the necessity of frequent re-grouping of a subordinate kind, with a special view to helping out the general classification and remedying its defects.

Let us revert for illustration to the classification of the Sciences, and let us pick out one science for the special purpose of exhibiting its various kinds of relationship. Ethics will suit our purpose admirably,—its bearings and connexions being manifold and the instance typical.

As Ethics is the science of human Character in reference to an ideal standard, it is properly enough regarded as a branch of the Mental sciences. But the mental sciences are numerous—psychology, sociology, metaphysics, &c.; and they stand to Ethics in all sorts of relations—causation, dependence, implication, &c. These relations must be clearly understood and schematically expressed.

Take, first, Ethics and Psychology. Now, as Ethics has to do in great part with character, and as character is a combination of certain volitional, emotive and intellectual elements, Ethics, in this point of view, must be regarded as a branch of psychology. The *methods* of the one science are the methods of the other also—they are introspection and objective observation; and Morality is a department of man's nature needing to be inductively studied, like all similar departments. But, further still, psychological *doctrines* find, many of them, their application in Ethics, and their meaning is only made all the clearer by their being presented in an ethical setting. Thus, the leading *laws* of psychology—those that give to it its distinctive feature and constitute indeed its scientific value—are those relating to

the Association of Ideas : Similarity and Contiguity play the most conspicuous part in the explanation of intellectual and emotive phenomena. But these are the laws also that dominate moral phenomena and afford us the explanation of Character. They here go under the name of Habit; and this change of name sometimes imposes upon us, and makes us believe that in changing the name we have effected a change in the guiding principles. But change of principles there is none; and Habit just means the operation of psychological laws directed on ethical or moral data. There is a change of *matter* or *content* indeed; but similarity and contiguity hold their sway here as elsewhere, and moral habits are built up after the same manner as we make our intellectual and other acquisitions. So, too, the ethical laws of Transference, of Distance in time, and of Sympathy are really applications of the psychological. By the law of Transference is meant the tendency to associate pleasures and pains with their adjuncts or their causes,—as when the miser hugs his money-bags, or the rescued sailor cherishes the log that saved his life, or when the invalid contracts a dislike to the physician that cured him by some drastic process. The law of Distance is, that the nearer a pleasure or pain, the greater its influence over us; the further removed, the less its motive power. We all know that "hope deferred maketh the heart sick," and an impending evil is prone to paralyse us. By the law of Sympathy is signified the tendency to realise the feelings and conditions of others, and to make them our own. This includes fellow-feeling with the pleasures as well as with the pains of others (the latter being Pity or Compassion), and extends to the lower animals as well as to our fellow-men. We have here an obvious connexion with the Fixed Idea.

So with many other ethical facts that might be instanced—for example, Conscience. But enough has now been adduced to show that Ethics presupposes psychology,—is dependent on psychological laws and psychological methods.

There is also a dependence of Ethics on Sociology. This, of course, arises from the circumstance that man is essentially a social being, and that his *moral* nature would have no meaning apart from his relations to his fellow-men. Indeed, we might go even the length of saying that, apart from social intercourse, Conscience could not be. For, were man a solitary individual, with no knowledge of and no connexion with others, it is not conceivable how duty, right and wrong, and other ethical notions could emerge. But place him in the midst of other sentient beings, more especially

place him in the midst of other men, and these conceptions immediately emerge: and not only do they emerge, but they are strengthened and developed. A man acts on his social surroundings and his social surroundings act upon him, and through this mutual action and reaction of subject and environment the moral nature has come to be what it is. It was the fault of the older moralists that they viewed man too much as an isolated individual, and it is perhaps the fault of the moderns that they are disposed to ignore his individuality; but self and sociality must both be taken into account, and you cannot, without disastrous ethical consequences, separate the man from his environment.

Next come Ethics and Jurisprudence. The relation here is obviously very close; for Jurisprudence has to deal with rights and positive law—law as embodied in national arrangements or as relating to general society. It, therefore, meets ethics on its *social* side; and many juridical conceptions are transported into ethical science,—such as Law, Sanction, &c. Ethics, however, reacts on Jurisprudence, and elevates its conception of Justice *as it is* by keeping before the minds of jurists the conception of Justice *as it ought to be.* Legal right and ethical right are not always identical; but the tendency, as civilisation advances, is to make them so.

Take, next, Ethics and Ontology: regarding which, it may at once be said that the connexion here is not quite of the same kind as we have seen it to be in the other cases. There it was a relation of *dependence*,—the methods, laws and principles of Psychology, for instance, were seen as carried over into Ethics. Not so here. The metaphysical or ontological data of Ethics, if they are recognised at all, must be recognised as *implications;* something that is found, *upon analysis* of ethical phenomena, to be presupposed,—fundamental, not as being first in the order of time, but as being involved in the revelations of the moral consciousness. These metaphysical data are usually put down (after Kant) as three in number:—(1) The Freedom of the Will, (2) the Immortality of the Soul, (3) the Existence of God. Concerning which, all that need here be said is that the second occupies an entirely different position from the other two. For, if the first be implied in the notion of Obligation ("*ought* implies *can*") and the third be involved in the Authority or Supremacy of Conscience, the other is a datum only at the second remove. All that Conscience at the most testifies is, that virtue *ought* to be rewarded and vice punished. We have to look to our experience of the world around us and see that virtue is fre-

quently *not* rewarded and vice is frequently unpunished here, before we can reach the conclusion that there is a hereafter for us, when wrongs shall be righted and justice shall be done.

What now of Ethics and Religion? Obviously, if the metaphysical implications above enumerated be accepted, Ethics must be regarded as the foundation of Religion, rather than Religion as the foundation of Ethics. Moral conceptions are prior, *in order of thought*, to religious conceptions; and without the first the second could not be understood. We may quite well draw out an ethical system without any reference to religion; but we cannot draw out a religious system without distinct reference to, without presupposing or embodying, ethical notions. Not only are men's ideas of the Deity and of His righteousness relative to the moral consciousness (hence the diversity in theistic beliefs among people of different ages and of different countries), but the very possibility of the Deity's holding intercourse with man at all is the moral consciousness. For, suppose a Divine revelation made: how is it to be known by us? how can its truth be tested? Clearly, by its *moral* bearings, or else not at all. To urge its acceptance, in the first instance, on the plea that it comes from the Deity, is a manifest *hysteron proteron*. We must reverse the method and judge whether it is likely to have come from the Deity by the kind of revelation that it is.

Again, both Political Economy and Education have a relation to Ethics.

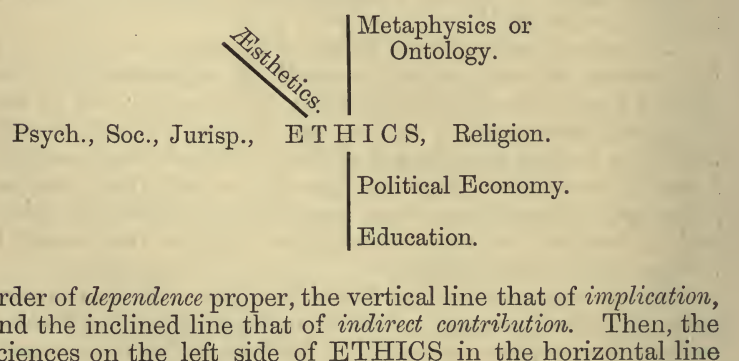
The leading principle of Political Economy is indeed the dominance in man of self-interest. It supposes that the unit of society is always a person disposed to buy in the cheapest market and to sell in the dearest. But although this is its leading principle, and that on which the science is founded, it cannot altogether ignore the fact that man has generous, self-sacrificing and benevolent impulses in him: and, in whatever extent it recognises this, to that extent it accepts the ethical position.

But the case is stronger for Education. There are considerable moral bearings here. It is the object of the teacher to form the pupil's character as well as to train his mind; and, for this purpose, he needs himself to know the power of the various moral motives, and needs to exercise great care in the application of them. Ethical considerations must also weigh with the writers and compilers of school-books. Lessons bearing on truthfulness, industry, manliness of character, chivalry, independence, and so forth, must be chosen; such as would encourage the corresponding vices,

or would tend in any way to lower the pupil's tone or debase his nature, must be rejected.

Lastly, Ethics has a certain relation to Æsthetics : by which I mean that there is such a thing as moral *beauty*. It would be quite wrong indeed to confound the Beautiful with the Good ; but there is, undoubtedly, a well-marked *æsthetic* aspect of morals, and this needs to be taken account of.

Now, if all these connexions between Ethics and the allied sciences exist, it is obvious that a bare *serial* classification cannot adequately represent them. By enumerating the kindred sciences in successive order thus—psychology, sociology, jurisprudence, Ethics, metaphysics, religion, political economy, education, æsthetics—you do not bring out the fact that Ethics is not dependent upon metaphysics (which comes immediately behind it in the enumeration) in at all the same way as it is on psychology, sociology and jurisprudence ; nor that the dependence of religion on ethics is of quite another stamp from that of political economy and education on ethics ; nor that the relation of ethics and æsthetics is quite different from both. Your single line is altogether inadequate and misleading. Clearly, a second line is needed intersecting the other, before we have clearness given to the expression ; and even this must be supplemented by other lines inserted at an angle. Thus, let the horizontal line in the accompanying diagram represent the



order of *dependence* proper, the vertical line that of *implication*, and the inclined line that of *indirect contribution*. Then, the sciences on the left side of ETHICS in the horizontal line (psychology, sociology, &c.) would be those that lead up to Ethics and on which Ethics is dependent ; that on the right side (religion) would be the science dependent upon Ethics : the upper part of the vertical line (where ontology is) would denote sciences whose truths are implicated in ethics ; the under part those (education, &c.) into which ethics enters : and the line or lines striking at an angle would serve to show

less significant relations joining on Ethics to more independent sciences,—æsthetics, for example. This, or some similar plan, is obviously required, if classification is to be that help to the understanding which it is capable of becoming.

But if this be so with respect to such a subject as the grouping of the sciences, much more is it so with Biological classification. The resemblances between groups both of animals and of plants are almost infinite, and no pains should be spared to bring out as many of them as is possible. The foundation of a *natural* group indeed is number and persistence of characters, and how can this be secured except by copious regrouping? How else can the mind be adequately helped in its effort to grasp the phenomena? Moreover, these regroupings, in order to be duly effective, must be accompanied by schematic devices,—chief of which is the Table. It is only by such means that the mind can be fully impressed with the unity that exists in the midst of variety throughout the world of animate beings; and only by such means can our view both of the whole and of the parts become clear and definite.

As, however, this is a subject that I have already handled in an article on "Botanical Classification" in MIND 20, I shall not here dwell upon it. Sufficient to have noted it, and to have called attention afresh to its character and importance.

IV.

A question, however, now presents itself. If it is the fact that complicated classifications need a system of grouping and regrouping, does not this tell against the logical character of the process altogether? No doubt, to some extent it does. For, it is an admission that the groups are not at all points and in every way mutually exclusive,—that, in a greater or a less degree, there is overlapping. But it is important to observe of what kind the overlapping is. Take the classification of the sciences, and it is seen that the process begins at its widest sweep with a pure dichotomous division: it is the contrast of the Abstract and the Concrete. Similarly, the kingdom of animals at its highest grade is divided into Vertebrates and Invertebrates; and the kingdom of plants into Flowering and Flowerless. So, the systematic arrangement of duties, in Ethics, proceeds upon the opposition of Egoistic and Altruistic; and any proper treatment of the Emotions must pay due regard to the dominant contrast of Disinterestedness and Malevolence. It is in filling

up the interval that the mutually-exclusive type cannot be consistently carried out. In so far as there is mutual implication among different groups, there cannot, to that extent, be mutual exclusion (the one idea cancels the other); and where, as in the case of living beings, of plants and animals, you have the phenomena of development and growth, of group shading into group by insensible degrees, rather than demarcated by a rigorous boundary,—cross-division is unavoidable. Hence the necessity of defining a *rational* principle of classification in the way that we have already done,—*i.e.*, as *luminous*, in opposition to the arbitrary and frivolous, rather than as mutually-exclusive; and hence the meaning of the words "having regard to the materials manipulated and the end in view" appended to the Rule in Section II. above. In dealing with living beings, any principle that may be chosen always requires you to admit of *exceptions;* and the correlated properties that a fundamental character carries along with it are only true *on the whole.* Though the typical Vertebrate has all the points enumerated in last Section, there comes such an exception as the lancelet (*Amphioxus lanceolatus*), which has the unique peculiarities of anomalous breathing organs, and anomalous organs of digestion and of circulation; which, moreover, is destitute of a heart, and which has no true brain and no true skeleton, —no skull, no true back-bone or vertebral column: and its position is secured to it among vertebrates only because, taking everything into consideration, it shows more affinity to these than to the invertebrates. On the other hand, several of the invertebrates show a clear approach to the vertebrate type. In the so-called cuttlefish, for example, there is a distinct brain enclosed in a kind of skull—a gristly, not a bony, case. Still, because the affinities are towards the invertebrates, it is classed accordingly.

Mutual exclusion, then, is not an imperative requirement in graded classifications. Are these, therefore, to be considered illogical? If their object were a purely ideal one, this conclusion would indeed be inevitable. But as their object is not a purely ideal one, but aims first and chiefly at laying hold of things as they are in *fact*, this conclusion is illegitimate. In classifying the emotions, we must pay regard to their subtle interdependencies as well as to their diversities and contrasts; otherwise, it is not the emotions we classify, but something else. In schematising the sciences, we must never lose sight of the fact that these sciences have a kind of organic connexion, and that their union is of as much importance as their separation. In

arranging plants and animals in the vast graded system of the Natural History sciences, we aim as far as may be at reproducing Nature, and our divisions can hardly be more sharply cut than obtains in reality.

Nevertheless, it must never be forgotten that, in each and all of these cases, there is a *plan;* and the very fact of a plan implies a logical procedure. And, as the ruling trait is fixity and number of correlated properties, rigorous adherence to this principle will keep us as near to the requirements of logic as the materials admit of.

V.

A word, finally, may be due on the bearing of Evolution on Natural History Classification.

Many evolutionists affect to despise Classification, and, as far as one can judge, seem to regard it as inconsistent with, or actually opposed to, their pregnant theory. Nothing, surely, is more unwarranted. It may safely enough be asserted that, had it not been for the existence of a highly developed scheme of biological classing, Evolution would still have been a thing to search for. And with equal confidence may it be asserted that, the more thoroughly Evolution is worked and the further it progresses, the greater is the help it will render towards the perfecting, not the destruction, of the Natural system. What Evolution does is to throw new light upon biological facts; and, in throwing new light upon them, it is better fitted than anything else to bring out affinities and resemblances among living beings. Now, as it is on affinities and fixed resemblances that Natural classification reposes, much may be hoped, and nothing need be feared, from the advance of this great fruit-bearing conception.

V.—PHILOSOPHY AMONG THE JESUITS.

By Francis Winterton.

In the plan of the Order founded by Don Inigo de Loyola, philosophical instruction occupies only a secondary place; still it underwent developments and took directions, in the course of the Society's career, that are worth a close study. I will at present try only to sketch out rapidly the main stages of the history, from the constitution of the Order about 1540 till its dissolution in 1773.

What is the fundamental idea that underlies the whole of Jesuit philosophy? To answer this question, we must first of all ask the previous one: What is a Jesuit? A Jesuit may be defined as 'a Roman Catholic profoundly and practically convinced that all things in this world (science and philosophy of course included) are but means for him to work out the salvation of his soul'.[1] A Roman Catholic starts from the assumption, regarded by him as indubitably sure, that his Church is in possession of absolute truth, and is accordingly the very best means of salvation in the world. This once admitted, the greater the number of souls saved by any man, the surer that man is of his own salvation; and the more zealously he upholds the Catholic Church, the greater number of souls he is sure to save. It follows logically that every effort of the Jesuit ought to tend towards upholding his Church; that every possession, every talent, every affection, even life itself, ought to be consecrated to that end alone. Every force, every influence, every tendency in the world antagonistic to the Church, must be unswervingly resisted: the Church cannot *do* wrong. Any speculative doctrine, any philosophical system, any scientific hypothesis hostile to the Church, must be relentlessly opposed: the Church cannot *be* wrong.

St. Ignatius had nothing whatever of the speculative philosopher in his nature; he was, on the contrary, intensely and overwhelmingly practical. Those who paint him with the romantic colours of chivalry, and make of the first Jesuit a sort of Christian Don Quixote, only caricature one side of his many-sided character. His dreams, visions and ecstasies never interfered with his knowing what he wanted and

[1] See the *Exercitia Spiritualia; Principium et Fundamentum.*

how he was to attain his purpose in the outside world. If anyone takes the trouble to read his *Exercitia Spiritualia* through, he will not be repaid by five lines of pure speculation, except perhaps in the *Contemplatio ad Amorem*, in the last 'Week'; and even that contemplation, as may easily be seen, works towards an end—towards the *one end* of the whole book. This allusion to the *Exercitia* is by no means irrelevant; we are at the very springhead of Jesuit philosophy. The book in question contains the whole idea of St. Ignatius, already worked out and matured in the solitary grotto of Manreza, at the very beginning of his conversion; and the whole subsequent life of this man, together with the whole history of his Order, is but the systematic evolution of the principles contained in this book. It is studied in silence and solitude, during one week every year, by each member of the Order. It is studied in the same absolute seclusion during the three probations: a week during the first, a month during the second, and a month again during the third. From its contents the subject of the daily hour of meditation of every Jesuit is selected. It is the theme of every retreat preached by a member of the Order; and it would be hard to find a single book, a single sermon, composed by a Jesuit, in which some idea taken from the *Exercitia* does not occur. Now in this book, after the first fundamental idea of salvation, from corollaries to corollaries, the author comes at last to the problem: By what means can the interests of the Church be best promoted intellectually? And the answer is given in the *Regulæ ad rectè sentiendum cum Ecclesia.* Not that, in raising this question, St. Ignatius means altogether to throw aside the free exercise of his reason. True, reason is for him a "means unto salvation," and nothing more; but, if *not* exercised freely, it is no longer reason. The Church, being true, needs no reasonings for itself, but only for its children; and the fewer they need, the more meritorious their faith is. "Blessed is he that hath not seen, and yet hath believed." Still, one must be practical, and it is a fact that the better and stronger the arguments given in favour of the Church, the more easy a task it is to believe. Therefore it only remains to look out the best arguments and the best system of philosophy whereby to defend the Church.

In the *Regulæ*, Loyola begins thus: "I must be ready to believe that what I see to be black is white, should the Church declare it to be so". This seems a rather astounding position for a man in his right senses to take up; and how any philosophy can be possible in such a state of mind is at

first sight hard to conceive. It would appear to destroy all the certitude of science, since we may suppose the Church stepping in at every moment, and denying the veracity of scientific experiments: 'This is not an explosion; that is not a gas; your analyses are not well made; your syntheses have led you into error'. Reason itself is overthrown by faith, since faith is in the right when it contradicts reason. And lastly, even religion, left without the basis of rational thought, is utterly annihilated, and nothing is left but an abject superstition, whose formula is: I believe—because I believe. If we look a little closer, however, we shall see that things are not quite what they seem.

St. Ignatius does not take a contradiction of faith with reason as his example, but a contradiction of the senses *versus* faith. He does not say, for instance, that supposing $2+2=5$ were to be decided by a Council, he would have to believe it. Nor is this contradiction of the senses an absolute one. It would be so, if he said: You must believe that what *is* black *is* white, if the Church tells you it is; or: You must believe that *what you see to be* black *you see to be* white, if the Church decrees it. He does not affirm either of these two contradictions, but only says that what *we see to be* black may *be* white; that is, may not be in itself what it is subjectively as perceived. It may be objected that this is to go quite far enough. So it is; and indeed I do not see how anyone can go farther without falling into a palpable absurdity. Let it also be remembered that, in the time of St. Ignatius, it must have seemed much more contrary to reason than it really is. We all know now that such a defect as colour-blindness not only may but really does exist, and that there are many instances of a man taking, *e.g.*, red for gray, which means that *what he sees to be* gray *is* red. But in the time of St. Ignatius this phenomenon was completely unknown, and the fact seems to render the boldness of his 'rule' still less excusable. He ought not, however, to be condemned without our noticing one plea in favour of his doctrine—*viz.*, that it is thoroughly consistent and logical. No Catholic can, without contradicting his own principles, say one word against Loyola's manner of proceeding: he but formulates clearly and explicitly what every believer in the Romish Church implicitly submits to. His rule is to believe against the evidence of the senses and, whilst admitting their subjective, to deny their objective infallibility, when their testimony clashes with faith. All Catholics believe in one omnipresent God, present, not partially but in totality, in every

part of space; yet their senses cry aloud that nothing can be undividedly present in several separate places. They believe that one unchangeable Person, the Word of God, was born, suffered and died; yet their senses affirm that all such processes imply variation and change. They believe that the appearances of bread and of wine conceal the body and the blood of Jesus Christ; and yet their senses warn them that what appears to be bread *is* bread, that what seems wine is wine in very deed. At every step there is a conflict between the ideas and judgments which the senses tend to produce, and the ideas and judgments that are evolved under the influence of faith. I here purposely abstain from passing judgment upon the principles from which St. Ignatius started; I merely notice that he was consistent with himself and strictly logical all along.

The standpoint from which he views everything having thus been indicated, it will hardly appear surprising that he arrived at the conclusion that Scholastic Philosophy was to be made much of.[1] It is a well-known fact that no system of philosophy is so little at variance with the dogmas of the Church of Rome as the doctrine of Aristotle. Other systems of doctrine may perhaps be wrested into compliance with the mysteries of that faith: Peripateticism lent itself to the transformation. If anyone wishes to study the process, and observe with what ease this change was brought about, he has only to read St. Thomas Aquinas's commentaries on Aristotle; on the completion of which the Sorbonne raised the prohibition it had so long laid upon the works of the Grecian philosopher. It may be that this facility of adaptation was solely due to the assimilative genius of Aquinas; still I am much mistaken if the doctrine itself, as Aristotle gave it to the world, did not count for a great deal in the success of the operation.

But while St. Ignatius, in the rules he lays down, inclines visibly to the Scholastic Philosophy, he does not exclude the different manner of doctrine professed by most Fathers of the early Church, which he calls Positive Theology. This is by no means an inconsistency on his part; still less is it a departure from his primal idea of upholding the Church, to which both the ancient Fathers and the Schoolmen of more recent date are equally necessary. But though he attributes to the former the important task of strengthening the heart and determining the will by their eloquence, he still gives the palm to the latter for whatever concerns

[1] See the *Exercitia: Regulæ ad rectè sentiendum*, &c., towards the end.

method and argument. They complete each other; but it is as literature and the fine arts, in a course of education, complete and are completed by scientific pursuits.

If we now turn to the *Constitutions*, drawn up by St. Ignatius and his first companions, and presented to Paul III. for approbation, we shall find the same idea more strongly and distinctly expressed. "As for Logic, Natural Philosophy, Ethics and Metaphysics, the doctrine of Aristotle is to be followed." "Let the Scholastic doctrine of St. Thomas be taught. . . . But if, in the course of time, another author should seem preferable for our students; for instance, should a *Summa* or book of Scholastic theology be published that should seem more appropriate to the present period, such a work might be used amongst us."[1]

This is very decided and unequivocal. Yet it is, on the whole, a much more judicious and moderate decision than anyone could expect who puts himself in the place of St. Ignatius, both as to his internal convictions and as regards the times in which he lived. Until that period there had not been a single religious Order that had failed to inscribe Scholasticism on its banner. Both in Metaphysics and in Natural Philosophy Aristotle reigned supreme. Most of the Platonists of St. Ignatius's time were noted heretics, even infidels; and Galileo, the Catholic adversary of Aristotle's physics, was not yet born. Catholic philosophers were divided into Thomists and Scotists; while Protestants attacked Scholasticism in general, and Thomism in particular, with incredible vigour and fire. *Tolle Thomam*, cried the great voice of Luther, *et ego diruam Ecclesiam*; which reminds us of Archimedes asking for a fulcrum, in order to move the world. At the Council of Trent the *Summa Theologica* of Thomas Aquinas was placed on the table by the side of the Holy Scriptures. When St. Thomas's canonisation was proceeding (1323) the Pope, John XXII., impatient at the formalities which hindered the Angelic Doctor from taking his place amongst the Saints, exclaimed: "What need have we of miracles to canonise him? every sentence he has written is in itself a miracle". And if, after this unanimity both of friends and of foes to the Church, we find the author of the *Constitutions* only choosing St. Thomas until some better author and one more adapted to circumstances should arise, we may well be astonished at his moderation.

The causes of this extraordinary moderation are easy to

[1] *Constt.* 4a Pars. Cap. xiv. § 3; Cap. xix. § 1, note B.

guess. The new organisation of which he was the founder had to struggle between the rival forces of the Thomist Dominicans and the Scotist children of St. Francis. He could not possibly keep to his leading idea—the best means of defending the Church—and at the same time embrace the doctrines of Duns Scotus; whereas, if he showed that the Society was absolutely and unreservedly Thomist, it would have set the Franciscans bitterly against him, and hardly conciliated the Dominicans, unless by a display of obsequious subserviency fatal to the independence necessary to any Order. Besides, he had in the example of the two Orders just mentioned a fatal instance of the results attained by party spirit in speculative things. I shall touch upon this again further on, but now merely point out that no enemies of Scholasticism could have done it more harm than its adherents did by their wranglings. Again, if we may attribute any personal feelings to a man so utterly absorbed in the realisation of his plans, St. Ignatius could not have easily forgotten that he had everywhere met with opposition from the Dominicans, who had twice thrust him into prison, for preaching before he was ordained a priest. Shall we add to these causes a vague and perhaps unconscious hope that some day there would arise a member of the nascent Society, whose writings might be deemed worthy to take the place of Aquinas, at least in the schools of the future Order? It may be; but that hope, if ever it existed, was doomed to disappointment. No one author among the Jesuits has the honour of being openly commented in its schools as an authority.

We may now pass to consider the first movements of the Jesuits in the philosophical line, and sum them up as a mere reaction against Protestantism. At the outset of the Reformation, one great question was raised, which is not yet set at rest. The problem of free-will finds Protestants far from unanimous at the present day; but at the beginning it was otherwise. Luther and Calvin, the two main pillars of the Reformation, had written the *De Servo Arbitrio*, and the *Institutio Christianæ Religionis*, each embodying their doctrine on this point. Everywhere Jesuit missionaries were engaged in fierce conflict with the Reformers, and everywhere they were met, if not with the absolute negation of free-will, at least with the negation of that amount of it which is necessary for the dogmas of their Church. This fact may perhaps throw additional light on the reserve with which St. Thomas is spoken of in the *Constitutions*, and the innuendo that he is not sufficiently "actual". The *Summa*

contra Gentiles and the *Summa Theologica* only reflect the light of past controversies; and among them that of Pelagius is one of the most famous. The Church, as everyone knows, had considered the British monk's idea of free-will to be exaggerated; accordingly all works of mediæval theology tended to abase nature, and to exalt the work of grace in man.[1] And when Protestantism came upon the field, crying down free-will as much as Pelagius had cried it up, some propositions of St. Thomas did certainly seem not adapted to circumstances. For instance, to quote only from his *Summa contra Gentiles*, the proposition "Quod *motus* voluntatis *causatur a Deo*, et non solum potentia voluntatis" (lib. iii. cap. lxxxix.), and the affirmation (lib. iii. cap. clxiii.) that "necesse est praedictam hominum distinctionem (the elect and the reprobate) *a Deo esse ordinatam*" must have appeared to Jesuits as both ill-timed and ill-worded without some explanation. Hindered by the decisions of the Church from going openly so far as Pelagianism or as Semi-Pelagianism, it was but natural that they should approach as near to these forms of thought as possible, in order more surely to avoid and more powerfully to resist the opposite tendency, which was more dangerous then. And so long as they confined themselves to struggling with Calvinists and Lutherans, who were outside the Church; so long as they only grappled with Baius and his followers, who, though in the Church, were the rebellious expounders of a system it had condemned,—all went well. But when the most celebrated religious Order in Christendom took up, partially at least, the opinions of Baius, and the Dominican Bannez brought forward the doctrine of 'physical premotion' as part and parcel of the system of St. Thomas, then the Society of Jesus found itself in a serious difficulty.

The Dominicans had comparatively little to do with Protestants, and considered all questions from a widely different point of view. The Jesuits asked, on examining any question whatever: Which side is it most expedient to defend in the interests of the Church? The Dominicans inquired what answer St. Thomas had given, or would have given; what opinion is pointed to by the consequences of his theories, or the language used by him. And so it happened that both Orders were right, from their own points of view.

[1] Not only works of theology, but of piety too. The *Imitation of Christ* contains chapters (on the different motions of nature and grace, and on the corruption of nature and the efficacity of divine grace: iii. 54, 55) that would hardly have been allowed later on.

St. Thomas repeatedly employs expressions that can without difficulty be interpreted in the sense of 'physical premotion'; and there is no doubt that the further a Catholic keeps from any popular heresy, the safer it is for him, so long as he does not fall into the contrary error. The question remains, of course, whether the Jesuits really did avoid Pelagianism; but they certainly were convinced that they did. A practical problem had arisen, from the moment when Bannez' theory saw the light. How could they possibly resist Protestantism with success, if they admitted as true, or even possible, a doctrine separated from Lutheranism and Calvinism only by the finest-drawn distinctions, which many were inclined to say were no distinctions at all? And when, after the Jesuit Father Monte-major's attack upon Bannez, they found the latter expressly approved by the Dominican Order, they could not help protesting *en masse*, in order to keep their hands free.

Two courses now lay open before them. One was to confine themselves strictly to an onslaught upon 'physical premotion,' without attempting to bring forward a view of their own: in a word, to attack what was dangerous without endeavouring to solve what was insoluble. The other was to bring forward a rival theory; and the latter course, as we know, was taken. This seems to me a slight deviation from the ruling idea of St. Ignatius. Louis Molina was a man whose genius at least equalled that of Bannez; and his theory '*de scientiâ mediâ*' is worthy of the best times of Scholastic theology. The Society, I am afraid, was not able to resist this splendid opportunity of 'showing off'; and perhaps jealousy of the Dominicans counted for something too. Still, 'showing off' and the humiliation of a rival Order have nothing in common with the defence of the Church. I know very well that they had the right to do as they did; what I contest is not the right, but the expediency of their decision. And what were the results of this one false move? Years of interminable discussion; the reputation of being Semi-Pelagians; the danger of a public condemnation as heretics; an incalculable amount of labour that might have been more fruitfully employed; the death even of two of their number, FF. Valentia and Arrubal, struck down in the ardour of debate; and, as some say, the death of Pope Clement VIII., caused by his solicitude and fatigues in these disputes. All this to what end, either as regards the Church or the Jesuits themselves? They avoided being branded as heretics, it is true, and that was a triumph, if we remember the immense influence their

adversaries then enjoyed at the Papal Court; but the doctrine which they considered to be so dangerous to the Church also escaped condemnation, merely because they gave way for a moment to a very natural desire of glory. Had they been satisfied with taking the offensive, 'physical premotion' might not have been anathematised; but, given the position in which the Romish Church then stood, it would certainly have been forbidden as dangerous. Instead of which, the Jesuits got nothing but a great deal of trouble.

The trouble brought upon them was in fact so great that they stood in great jeopardy of losing their reputation of purity in the faith, which, to an Order that could hardly count fifty years of existence and had already made almost as many enemies as there were monks in the whole world, was of supreme importance. To parry this blow, the fifth General Congregation published the following decrees, in 1594, a few years before the Order was called to account by Clement VIII., and whilst the quarrel was raging the most fiercely between Thomists and Molinists, each treating the other party as Calvinists or Pelagians. The italics are of course wanting in the original.

"The Committee appointed to examine the doctrines and methods of our schools, having carefully discussed and fully debated the question, and laid before the Congregation their conclusions as to what concerns the speculative part and choice of opinions, the Congregation has approved their sentence. And firstly, it has unanimously declared that *the theological and scholastic doctrine of St. Thomas*, being more weighty, safer, more approved and better agreeing with our constitutions than any other, *is to be followed* by our Professors.

"Let *our teachers follow St. Thomas*, as to Scholastic Theology; and in future let those alone be promoted to the chairs of Divinity who are well affected towards the same. As for such as are unfriendly, or *even indifferent to him*, let them not be allowed to teach. But, for the conception of the B. V. Mary" [about which St. Thomas is known to have held opinions that are now heterodox], "and as to the question of solemn vows" [which most especially interested the Society], "let them follow *the opinion that is most commonly received and followed by theologians at present.*

"Should the opinion of St. Thomas be doubtful, or *should Catholic doctors not agree upon questions which St. Thomas has not treated*, our Professors are free to choose whichever side they prefer.

"In matters of any considerable importance, our Professors must not depart from Aristotle's doctrine, unless when the latter holds an opinion not generally admitted at present, and still more when he contradicts the true faith.

"They must never speak of St. Thomas otherwise than with reverence, following him with ready minds whenever they can, and when they cannot, separating from him with due respect and as against their will.

"They must introduce no new questions, nor any opinion that is not held by some author of note, without having consulted their Superiors; nor should they defend any proposition repugnant to the axioms of philosophers and the common sentiment of the Schools. And let them know

that, should any of them be *too much given to novelties or of too independent a way of thinking*, they shall certainly be deprived of their professorial functions.

"They must not, however, be so much attached to St. Thomas as to set him aside in no question whatever. Even those who profess to be thorough Thomists, do not follow his teaching in all things: and it is not just that the members of our Society should be more tightly bound to St. Thomas than the Thomists are themselves.

"In questions that are merely philosophical it will be also allowed to follow other writers, that have treated more specially of those subjects." [1]

This decree may well be called a master-stroke of policy. Clement VIII., though friendly to the Jesuits from other points of view, and notably as to their return to France, whence they had been banished under Henry IV., is well known to have leaned towards the opinions of the Dominicans; and being a pure Thomist on all other points, he seemed much inclined to put the Jesuits in the wrong in the question of predetermination. It is easy to guess how much this decree must have tended to pacify him, and even to make him doubt who was really in the right, since the Jesuits professed to be no less attached to St. Thomas than the Dominicans. At least, if they did not say so, they let it be supposed, by the stress they laid upon the injustice of having to be *more* Thomist than the very Thomists. There is also a covert allusion to the question in dispute at that time: the decree mentions the case of St. Thomas's opinions being doubtful, or his not having treated the matter; for the question raised by the early Reformers was such that the few words written by Aquinas on the subject of predestination, &c., are utterly insufficient, ambiguous by their very brevity, and of very little use in the controversy that was then going forward. Nothing is more reasonable than the decree of the Congregation; nothing better calculated to allay the fears of heresy, that had sprung up in many minds. The Jesuits indeed demanded a certain independence; but what independence? They decide not to follow Aristotle without reservation. They resolve not to be more ardent disciples of St. Thomas than his most zealous followers. They are ready to expel any professor who is *too* independent, *too* fond of novelties, *too* little penetrated with respect for the holy Doctor; and the particle *too* seems clear enough to all who use it. If they wish to be allowed to separate from his guidance on some points, they only specify two; and in these they only elect to follow the general sentiment of the Schools. Pope Clement VIII. must have

[1] *5 Congr. Gen. Decr.* xli.; lvi. § 2.

been edified, when he read those decrees, to see what the real feelings of the Society were. But perhaps he did not know what the Jesuits were perfectly well aware of: every rule, every decree, has to be interpreted according to the meaning of those who draw it up. The following anecdote, which is perfectly authentic, may give an idea of what interpretations can be given to the strictest rules; and it is an axiom in the Society that rules are to be interpreted according to custom and precedent, unless a new decree supervenes to define their signification more exactly.

A novice was in France some years ago, at the time when the Comte de Chambord and Don Carlos were much talked about. He had heard the rule, read every month in the refectory, to the effect that no one was to speak about the wars and quarrels between Christian kings and princes. Now all the novices were busied during the time of recreation with the hopes of Henry V., the white flag, the blockade of Bilbao, and so forth, talking of all these subjects without the slightest pangs of conscience on account of the rule. Nay, more, when the Master of the novices came amongst them, he used to set the example of such discourse, with so much enthusiasm for the Royal cause, and so much apparent forgetfulness of the rule, that the young man took the earliest opportunity of asking for an explanation. It then appeared that the rule was only intended to suppress opposite national feelings; but that when anti-religious Republicans stood on one side and Christian Monarchists on the other, politics, forbidden when they have only a strictly temporal object, become allowed as soon as spiritual interests are concerned.

I have related this merely as an instance of legitimate interpretation, which sometimes may lead to unexpected results; and indeed it was no difficult task for the Jesuits, without any far-fetched interpretation, and keeping strictly to the letter of the decree, to do pretty much as they liked with St. Thomas. One thing alone was clearly understood: that they were to respect him very much, and not to set his opinions aside without reason. But as for adopting his opinions without reason, that was another extremity from which they were guaranteed by the very letter of the decree. Between slavish reverence and disrespectful freedom there is a great distance, and one may find between the two a very considerable borderland of independent reverence and freedom blended with respect. On this borderland the Jesuits very cleverly pitched their tents, and took up a strong position. Their position is well illustrated by the works of Suarez, the

most celebrated of Jesuit metaphysicians, who created, so to speak, a School in the School. Scholasticism stands midway between pure Empiricism and absolute Idealism; it is the 'Empire of the Middle'. But Scholasticism itself being divided into the antagonistic schools of Aquinas and of Duns Scotus, Suarez set up a 'half-way house' between the two. And if the maxim 'In medio veritas' be allowed, then Suarez was the most likely of all to get at truth. It is curious to see how respectfully independent he is of the 'Angel of the School,' and how often he follows the leading of the 'Doctor Subtilis,' whilst apparently treating him as of slight account. On the minor philosophical questions he is almost always more or less at variance with St. Thomas. Aquinas, for instance, affirms that essence and existence are really different; Suarez denies it. Aquinas asserts that the soul gives the human body not only humanity, but corporeity; Suarez contradicts him. Aquinas thinks that to a complete non-universal human being, 'something' must be added in order for it to become a person; Suarez thinks the addition quite unnecessary. Aquinas is of opinion that perfect happiness, or beatitude, is an act of the intelligence—contemplation; Suarez makes it consist in an act of the will—love. All these points, together with many others, too numerous to be mentioned here, are matter for divergence; and as for finding fault with the proofs given by St. Thomas, Suarez is absolutely relentless. He might almost be called captious, were it not true that proofs, in order to be proofs, must resist the sharpest fire of adverse criticism. Still, if he agrees with Scotus on most of the minor points, he is with his adversary on most of the major ones; particularly in the great problem "whether Ens is a generic term, or a name given to different objects by analogy only"; and he altogether repudiates the celebrated Scotistic "formal distinction *a naturâ rei*"—half real, half logical—both and neither.

Such was the liberty which distinguished the Order of Loyola from that of St. Dominic. Here a few words are needed to mark out more distinctly the different spirits that pervaded these two famous bodies of men; and it may not be amiss to state briefly in what manner the latter society fixed its opinions at once and for ever. Numerous adversaries of St. Thomas had arisen after his death, which took place in 1274. In 1276, the Universities of Paris and of Oxford had condemned four of his theses as contrary to faith; and many Dominicans, in England especially, had publicly opposed some of his doctrines. The heads of the

Order, indignant that such an outrage should have been inflicted on the memory of the Angelic Doctor, hastened to take defensive measures. In 1278, a general Chapter, assembled at Milan, sent to England Raymund Meuillon and John Vigorosi, with orders to punish and revoke from their functions such of the Superiors and Professors as attempted to dishonour the memory of Brother Thomas. And in 1286, a second general Chapter commanded every member of the Order to defend faithfully the teaching of St. Thomas, under pain of deposition from his charge. The whole Order obeyed the sentence to the letter; and from this time, the doctrine of St. Thomas became to the very smallest detail, the doctrine of the Order: the Dominicans became Thomists. The Franciscans were not slow to imitate their example: Scotus, chosen as their great leader, contradicted Aquinas on every point on which he possibly could; and the Franciscans became Scotists. Both parties disputed and wrangled together for two hundred years; and as they wrangled, philosophy gradually went down; it was no longer a search after truth; it was the eager competition of two rival establishments. At last Protestantism arose, and Scholasticism was shattered; Descartes and Locke wrote, and Scholasticism was destroyed. One first cause of the ruin that came upon the most durable edifice of human thought was this want of respect for individual liberty shown by the Dominicans in 1286.

The Jesuits proceeded otherwise, and certainly with more tact and better knowledge of human nature than their adversaries. The very fact of their being a body of which each member was responsible for every other, obliged them to lay a heavy hand of restraint upon individual thought; but this restraint was rendered as light as possible, considering the necessity of discipline. It was not the ponderous unity of the Macedonian phalanx; it rather resembled the agile strength of the Roman legion. The Jesuits had *no special doctrine of their own*. It has been said that Molinism was the doctrine of the Society. This is very far from exact. Many Jesuit writers of note differ from Molina in almost all, save the one essential point of making the human will "a faculty that, even when all conditions of activity are present, is free either to act as it chooses or not to act at all". But this thesis is nothing more than the mere denial of 'physical premotion'. So, even on this point, the Society has no particular doctrine. All it does is to forbid certain doctrines to be upheld for the time being, not as false, but as ill-timed and inconvenient. This explains how, for instance,

there was a time when no Professor who admitted the existence of atoms would have been permitted to retain his chair; and now, without any change in the written laws of the Society, Professors every day teach that atoms exist, because the inconvenience that once was felt is felt no longer, and the prohibitory clauses have little by little been allowed to fall into desuetude.

That no doctrine was ever specially imposed by the Society may seem a strange assertion to readers of MIND who recollect that not long ago (July, 1886) there appeared in the pages of this Review a notice written by one who appears to be well informed, about the order of Father Beckx, inspired by Pope Leo XIII., to teach the real distinction of matter and force (or form). But this is only an exception, and the circumstances under which it took place were exceptional too. As for the liberty left in the Society to all doctrines by which the Church did not seem endangered, it is sufficient to notice the decree of the thirteenth General Congregation, that runs as follows :—

"It has been reported to the Congregation that some are persuaded that the Society has taken on itself expressly to defend the opinion of those doctors who hold that it is allowable to follow the less probable opinion of two, which favours liberty of action, and set aside the more probable one, according to which one is morally obliged to act. The Congregation has thought fit to declare that the Society has neither forbidden nor forbids the contrary opinion to be defended by all those who think it more likely to be true."[1]

Here we find the very Society that has so often defended Probabilism, and had so many awkward thrusts to parry on its account,—so much so, that the Jesuits are perhaps better known as Probabilists than as followers of Molina,—declaring that any of its members are perfectly free to defend the contrary opinion! This is, I think, a strong enough proof of my assertion that the general rule of the Order was only to exercise a negative and temporary supervision over the doctrines taught by its Professors. Father Acquaviva indeed[2] tried to impose on the Society the doctrine of Suarez in the question of Grace and Free-will, midway between Molina and the Thomists. But here he did not succeed, and was not approved by the following General Congregation. Many details too, of Molina's system, have been rejected by the majority of Jesuit philosophers. Molina

[1] *13 Congr. Gen. Decr.* xviii., 1687.

[2] So I was told by a Jesuit of some note, but I have not been able to find any trace of the fact in the decrees of the General Congregations.

said, for instance, that God saw the future possible acts of man through His 'supercomprehension' of human nature. Given a being of a certain intelligence, he will be right x times in his guesses as to what a given man will do in given circumstances. If his intelligence is twice, thrice, four times as great, he will be right $2x$, $3x$, $4x$ times in his guesses. And if his intelligence $= \infty$, then $x = \infty$ also, which means that God will be always right. The majority of Jesuits, however, maintain that God knows the future possible acts of man 'in themselves and without any medium,' which is clearly no answer at all to the question. But to return: in all questions, the Professors of the Society knew the general direction that was considered safe, and were coerced only when they went too far to the right hand or to the left. If Molinism, therefore, understood in general as a system of Indeterminism, became the doctrine of the Society, it was because the majority declared in its favour, and the Generals, in consequence of this verdict of public opinion, gradually eliminated from the professorial sphere those who were opposed to it.

A remark which is not essential, but which serves to show what curious inconsistencies we sometimes meet with both amongst individuals and public bodies, is that, at the very time when the Jesuits stood up the most strenuously for the doctrine of Free-will, they were (not without reason as to some members of the Order) accused of laxity in their system of Ethics. It would have seemed more natural for them to have been accused of exaggerated severity, since they maintained so completely the responsibility of man. But the latter accusation was never made against any Jesuit, so far as I am aware. If a Jansenist or a Thomist fell into sin, he might have said, with some appearance of a reasonable excuse: "I have not received efficacious grace"; or "I have not been physically premotioned to resist sin". And whether such excuses have any value or none according to these systems, is no matter at all; it would seem that excessive laxity *ought* to be found on their side, if found anywhere. And yet they were by far the severest moralists. Perhaps the Jesuits, too confident in the speculative worth of their principles, did not think enough of reducing them to practice; or it may be that their opponents, instinctively feeling their weakness on that point, strove to hide it as much as possible by extreme and inconsistent rigidity in their ethical theories.

The 17th century dawned in the midst of these controversies, which, ending in nothing, only tended to bring

Scholasticism into greater and greater disrepute. There was a vague feeling of its inefficiency in men's minds; and this feeling did not altogether spring from the fact that the number of talented expounders of its doctrine was small; for, not to speak of any writers but those of the Society of Jesus, Suarez, Cardinals Bellarmin and Tolet, Sylvester Maurus and Molina would have done credit to any century whatever. At about that time René Descartes, a pupil of the Jesuits, set to work to renew the whole philosophical edifice, and, by the lucidity and interesting simplicity of his style, the thoroughness of his method and the seemingly mathematical rigour of his demonstrations, attained the results known to every philosophical student or amateur. Locke, coming after Descartes, showed himself as independent of Peripateticism as he; but his influence was not powerful till later on, and merged into the general current created by Descartes. Descartes, on account of the predominance of the French language throughout Europe, of the imaginative power of his own genius, and of the moderation with which he refrained from attacking any of the dogmas of the Roman Catholic Church, saw his ideas spread rapidly and make numerous partisans. He besides maintained a firm friendship with the teachers of his youth. Many letters written by him to different members of the Society of Jesus on philosophical subjects testify how desirous he was to find auxiliaries in them. He even wished his system, sprung from the brain of one of their pupils, to be what Thomism had been to the Dominicans, or Scotism to the Order of St. Francis, and hoped that Cartesian and Jesuit might be two words signifying the same thing. During his life, the Society neither disappointed nor flattered this hope. Such a change was not possible immediately; so complete a rupture with all their old traditions and the universal sentiment of all preceding and contemporary Church philosophers, could not be dreamed of on a sudden, and, if to be thought of at all, would only be the outcome of a gradual, almost insensible development of ideas. So long as Descartes lived, the Society contented itself with taking his system into serious consideration; and Descartes, convinced of the value of his system, was satisfied with this attitude. But, as far as I can judge, his opinions never really had the slightest chance of being received as he expected them to be, and I believe it was a member of the Society who gave the Scholastic verdict against him: *Quae vera dixit, non nova; quae nova, non vera sunt.*

The fact is that the Jesuits had a double question before

them, one very easy, and another much less so. As already stated, they never for an instant thought of making his system theirs, either at once or by degrees. But were they to allow it in the Order as a defensible theory? or had they to exclude it from their teaching altogether? This could hardly be answered off-hand. There is a decree dated from about a year before Descartes' death that runs thus:—

"Complaints have been brought against Professors of Philosophy that they lose time over useless questions, that they disturb the order of the matters which they teach, that they take too much liberty in choosing their opinions. But the judgment of the Congregation is, that nothing else is required save the vigilance of Provincials and Rectors."[1]

In this decree, several things are to be noted. First of all, the date. Secondly, the complaints (such as had never been made before) that coincide with that date; and the matter of complaint also points to the perturbation produced by Descartes' system. His methodical doubt, his denial of the vital principle in animals, his vortex-theory, his inquiry after the place of the soul, must have appeared to the Scholastics very "useless questions," to say the least. His new theory "disturbed the order" of metaphysical disquisitions much more than it altered their results. And if anything was needed still to point out Descartes, it is the complaint of the "too great liberty"—the Latin has it *licentiam*—which his adherents were wont to take. Thirdly, we may note, in conjunction with the date, the refusal of the Society to put down obnoxious Cartesians that were to be found amongst its members. And lastly, the somewhat disdainful tone of the remark that the vigilance of local Superiors was quite sufficient to obviate any inconvenience that might otherwise result from this tolerance. But tolerance was one thing, acceptance was another. As to the question whether Cartesians ought to be tolerated, the Jesuits had to refer to their first principle of conduct, and inquire whether the doctrine brought forward by Descartes was, neither in itself nor in its results, contrary to the Catholic faith. Cartesianism could certainly be understood in a manner that was not incompatible with the doctrines of the Church, and Descartes himself was a living proof of that; but could it not be understood otherwise? And—worse still—was it not possible that the very principles of the system led surely, when fully matured, to an irreconcilable hostility between Reason and Faith? This was to be seen; and this was what the Society waited for, ready to

[1] *9 Congr. Gen. Decr.* xxiii., 1649.

point against the new philosophy all the resources of their formidable arsenal of argument and erudition, as soon as they saw it turn the wrong way.

At first, all seemed to go well. A moderate Cartesianism, mixed with many ideas of the School, soon became popular among the French clergy, and is easily discernible in the writings of Bossuet and Fénélon; those of the former, especially his *Élévations sur les Mystères*, contain many passages equal to the finest of Descartes' *Méditations*, and tending in the same direction. Its influence is also clearly to be seen in the *Logique de Port-Royal;* and though the Jesuits were the deadliest enemies of the Jansenists, by whom that work was published, they could not deny its value as a text-book.

But Spinoza came on to the scene, followed by Bayle. Both of them were partisans of Descartes; both of them went much further than he. Pantheism on one hand, indifference and scepticism on the other: such were the consequences that flowed from the principles of the great reformer. It became evident to the Society that Cartesianism, whatever the intentions of its founder might have been, was radically bad and dangerous to the interests that it was their duty to protect. It was thenceforth their business to oppose it by every means in their power. In 1677 Spinoza died, and Bayle in 1706. Nineteen years after Spinoza's death, and ten before that of Bayle, the fourteenth General Congregation requested Father Thyrsus Gonzalez, the then General, to draw up an Elenchus, or list of those opinions which members of the Society were forbidden to teach; taking occasion at the same time "to declare how much our Society has always abhorred and does still abhor all novelty of opinion in any question, and especially laxity on points of Morals".[1] I have not been able to procure the Elenchus referred to, but am informed by very trustworthy authorities that it has principally to do with Cartesian opinions, and those maxims of lax morals that gave rise to the biting sarcasm of Pascal's *Provinciales*. A great reaction had set in throughout the Society. All those who had hitherto thought there was room in the bosom of Catholic unity for more than one philosophical system were now dismayed at the consequences of the new doctrines, that appeared more and more clearly every day; and set themselves to work to destroy Cartesianism root and branch, before it was too late. Of course, in this reaction, as in all reactions, there were

[1] *14 Congr. Gen. Decr.* v., 1696.

excesses. The too zealous opponents of the fashionable system then abroad did not always discern what they ought to assail in preference, and how to assail it; and they often battered at the strongest points of the theory as fiercely as at the weakest. Theses were even published, in which it was stated that to affirm the existence of atoms was to commit the crime of heresy! It was all of no avail. Cartesianism answered to a want of the human mind—the want of novelty. Men were tired of hearing the same eternal theses eternally attacked and eternally defended by the same objections and the same proofs. It was as idle to attempt a successful stand against a system which—rightly or wrongly—professed to supply that want as to stop a mighty wind in its onward course. Had the Jesuits been as wise then as it is easy to be now after the event, they would have endeavoured to meet the public demand by other and more striking novelties, not inconsistent with faith. A negative position, a mere denial, is always disadvantageous; and in this case it had the peculiar disadvantage of engendering new enmities: the Jesuits had already enough of old ones.

They had now to do with four sorts of adversaries, if not more, in the field of speculation alone. From the first, Protestants were their natural enemies. Their controversies with the partisans of Baius and of Jansenius had created others, no less implacable and no less ardent than the first. The whole Order of St. Dominic was, to a man, inflamed with burning zeal (none the less earnest for being kept down by the commands of the Holy See) against that upstart Society that had shown itself able to hold its own in presence of their invincible expounders. And Cartesians of every sort, from the most moderate to the most extreme, were deeply offended at the sudden change of front which the Jesuits had just effected. Then Voltaire appeared.

The first thirty years of the 18th century were thus completely taken up with struggles in the intellectual sphere, even before the last-named combatant entered the arena; afterwards, the conflict became still fiercer and more difficult to sustain. "Qui trop embrasse, mal étreint," says the French proverb; and it would seem that the Jesuits, in their ambition of universal activity, had not sufficiently reckoned what amount of intellectual power could be expected of a small body that never counted more than from ten to fifteen thousand effective members. Moreover, the 18th century is notable by a marked absence of philosophical talent amongst them. The decree of the sixteenth General

Congregation bears obvious traces of a feeling of weakness. It affirms that the Scholastic doctrine, "being more convenient for Theological purposes, must be maintained"; which evidently shows that many were of opinion to set the system aside, and follow in the wake of Huet, Malebranche, Leibniz, and all such authors as favoured Christianity in any way soever. The paragraph that concerns the study of experimental Physics is curious also; but the whole decree is worth studying.

"Several Provinces have requested the Congregation to provide lest, on one hand, too much liberty of opinion enter into our schools, and lest, on the other, the minds of students be narrowed by mere speculations and *metaphysical subtleties*." Thereupon the Congregation decides as follows:—

"1. That the philosophy of Aristotle is not contradicted but confirmed by that more agreeable kind of study which, by means of mathematical principles and the experiments of the erudite, explains and illustrates the more remarkable phenomena of nature.

"2. *Since* the Society *has embraced* the philosophy of Aristotle *as more useful to Theology*, it must absolutely be maintained, according to what is prescribed in the Constitutions and the Rules that concern our studies. And that not only in Logic and Metaphysics, but also in Natural Philosophy, where the Peripatetic system concerning the constitution of bodies is not to be omitted.

"3. Should the Provincials notice that any Professor is fond of new things, and sets the aforesaid doctrine aside, either openly or by subterfuges, he is to be removed from his charge." [1]

The words "metaphysical subtleties" point to a great change come over the whole Order. A hundred years before, no one would have dared, would even have thought, to brand the time-honoured disquisitions of the School with such an epithet; and now, with the best of intentions, it slips into the very declaration made by the heads of the Society in favour of Scholasticism. Metaphysical subtleties! All the 17th, all the 18th, century breathes in those words. Again, notice the second decision. "What's done cannot be undone." Since the system *has* been chosen, let us keep to it. It certainly is more useful for Theology. As for its other merits, we may have our doubts. The Society chose it at first for no other motive than the one we allege, and until that motive is proved to be mistaken, we must stand by it. Cardinal Ptolemai is a very good representative Jesuit philosopher of those times. His treatment of the question of Matter and Form is quite typical. He candidly states the difficulties against the system, points out the answers made, and shows how those answers fail to give satisfaction. Nevertheless, he holds to it because of authority and the wisdom of antiquity, &c.

[1] *16 Congr. Gen.*, 1730.

Scholasticism was plainly doomed, and the decree above quoted is a proof of what was going on within the Society. That it was not sufficiently enforced is certain; for, only twenty-one years after, in 1751, the seventeenth General Congregation found it necessary to remind members of its provisions. This was again a useless protest. Cartesianism had succeeded in destroying the confidence they had once felt in the old doctrine; and with less confidence came, of course, less study, which engendered greater distrust; and so on. We know what the last Jesuits of the 18th century taught—an amalgam of propositions taken at random from authors of the most opposite opinions. Read the works of Hauser, Mayr, Storchenau, Zallinger and the other best-known Jesuits who at that period wrote upon philosophy. They did not even understand the difference between the Scholastic theory of ideas and Lockian or Gassendian empiricism; in the problem of the union of mind with matter they maintained the theory of Plato, and Descartes' *influxus physicus*, taking these for identical with the Aristotelian system; they made not the slightest difference between the sensitive and the spiritual faculties of the soul. These poor representatives of the School—for they believed themselves to be Scholastics—quoted at every page Locke, Leibniz, Descartes, Wolff, Bacon, Gassendi (a singular collection), as authorities by whom every question was to be decided; but as for Aquinas, his works had become almost a *terra incognita* for them. True, they were practically faithful to their great maxim even then. Scholasticism was at that time so entirely overwhelmed with ridicule, so completely unknown, that it would have been a task above their forces to set it up again. They would have undergone no end of criticism, and times were not such that they could afford to render themselves laughing-stocks more than was absolutely necessary. They therefore tried, by a practically clever, though most unphilosophical, mixture of different doctrines that were not hostile to the Church of Rome, to keep pace with their century without giving way to it. But enough has been said to show that when the Society of Jesus was dissolved towards the end of the century, its philosophical power and influence had already been wholly lost.

Here the present article may be brought to a close. The history of philosophy amongst the Jesuits in our century is closely connected with the contemporary revival of Scholasticism, and may perhaps on some future occasion be treated in this connexion.

VI.—CRITICAL NOTICES.

Phantasms of the Living. By Edmund Gurney, M.A. (late Fellow of Trinity College, Cambridge), Frederic W. H. Myers, M.A. (late Fellow of Trinity College, Cambridge), and Frank Podmore, M.A. 2 Vols. London: Rooms of the Society for Psychical Research, also Trübner & Co., 1886. Pp. lxxxiv., 573; xxvii., 773.

What should be our philosophic attitude towards alleged facts, apparently well attested, of which we can give no satisfactory physical explanation? This question will probably suggest itself to many of the readers of *Phantasms of the Living;* and it will receive many answers, verbally expressed or practically acted on. Between those who greedily swallow as accredited ghost-stories the accounts of mysterious appearances here presented to us and those who reject them with ridicule and scorn, there will lie a great body of "common sense" folk who are content to entirely ignore them. But there may also be some to agree with the present writer who, in already noticing these volumes in *Nature*, said: With regard to spontaneous telepathy, notwithstanding the large amount of evidence so carefully collected and criticised, I prefer to credit the whole to a suspense account.

And what is Telepathy? In the words of our authors it is "*the ability of one mind to impress or be impressed* by another mind otherwise than through the recognised channels of sense. We call the owner of the impressing mind the *agent*, and the owner of the impressed mind the *percipient;* and we describe the fact of the impression shortly by the term *telepathy.*" So far good; but before proceeding further we naturally inquire what, in the authors' view, is the relation between the mind and its "owner". Mr. Gurney, who is responsible for all but some eighty pages (by Mr. Myers) in these volumes and whose work throughout displays extraordinary skill and candour, declares at the very beginning that "Mental facts are indissolubly linked with the very class of material facts that science can least penetrate—with the most complex sort of changes in the most subtly-woven sort of matter—the molecular activities of brain-tissue". But elsewhere he tells us that the difficulty of rounding-off the idea of personality and measuring human existence by the limits of the phenomenal self suggests "a deeper solution than the mere connexion of various streams of psychic life with a single organism"; namely, "that the stray fragments of 'unconscious intelligence,' and the alternating selves of 'double consciousness,' belong really to a more fundamental unity, which finds in what we call life very imperfect conditions of manifestation". On the whole, I take it, Mr. Gurney would not be prepared to maintain the indissoluble connexion between

psychoses and neuroses. Assuredly Mr. Myers would not. He believes that, "besides sub-conscious and unconscious operations, *super-conscious* operations also are going on within us, operations, that is to say, which transcend the limitations of ordinary faculties of cognition, and which yet remain—not *below the threshold*—but rather *above the horizon* of consciousness, and illumine our normal experience only in transient and clouded gleams". We may liken the mind to a river with its surface of consciousness and its undercurrents of unconscious and sub-conscious operations. To these, if I take him aright, Mr. Myers would add condensations on the surface from a surrounding atmosphere of the super-conscious. In any case, in the Introduction, Mr. Myers emphasises his antagonism to "the materialistic synthesis of human experience. The psychical element in man," he insists, "must henceforth almost inevitably be conceived as having relations which cannot be expressed in terms of matter."

I have thought it well to draw attention to the authors' attitude towards this vexed question. It is not a question, however, on which they themselves lay much stress; nay rather they feel constrained to leave the physical aspect of the problems with which they deal on one side; and in this we will for the rest follow them. "However things may be," they say, "on the physical plane, the facts of which we present evidence are purely *psychical* facts; and on the psychical plane, we can give to a heterogeneous array of them a certain orderly coherence, and present them as a graduated series of natural phenomena."

Now from the study of any graduated series of natural phenomena the laws of their nature and origin are apt to emerge. Let us therefore turn to the phenomena and their emergent laws.

The phenomena of telepathy seem to fall under two heads: first, what may perhaps be termed simple or ideal transference, where an idea, mental image or motor impulse is transferred as such from an agent or agents to a percipient; secondly, phantasmal or clairvoyant transference, where that which is transferred is not an affection of the agent but an idea of the agent as affected. An example of each will serve to bring out the difference between them: (1) Mrs. Severn, at Brantwood, Coniston, wakes up with a start, feeling that she has had a severe blow on the mouth. At the same moment her husband, sailing on the lake, was caught in a squall and was struck in the mouth by the tiller of his little craft. Here a painful affection of the husband is transferred as such to his distant wife. (2) Mrs. Bettany, when a child of about ten years old, was walking in a country lane reading geometry; suddenly she saw a vision of a bedroom on the floor of which lay her mother, to all appearance dead. She fetched a doctor and led him to the room, where they found her mother actually lying as in her vision. Here that which was transferred was not a sensation of swooning but a vision of the swooning mother. This inverted transference is so noteworthy

that I will illustrate it by another case. Mrs. C. is at church, and her children wish to remain for a christening; 'I cannot,' she said; 'somebody seems calling me; something is the matter'. She was summoned next day to the deathbed of her husband, concerning whom she had no more cause to be anxious than that occasioned by his reporting himself to be a little bilious. Here, be it noted, it is not the sense of wanting but the sense of being wanted that is transferred. This change of voice from active to passive is hard to explain on any telepathic hypothesis.

In both ideal and phantasmal transference we have (1) voluntary and (2) involuntary cases. The voluntary transference of ideas, tastes, smells, mental pictures, has been the subject of painstaking investigation on the part of some of the members of the Society for Psychical Research, and constitutes what the authors term their "experimental basis". I must refer the reader who is unacquainted with the nature of the evidence to the work under review or the Reports of the Society. Suffice it to say that remarkable results have been obtained under conditions which, in the opinion of the investigators, preclude trickery. Still at present we seem to know absolutely nothing of the laws of the supposed transference. Those who have the percipient power are few; and it is noteworthy, as Prof. S. Newcomb, in his presidential address last year to the American Society for Psychical Research, has pointed out, that these few are strangely grouped—three or four children and a waiting maid in one family, that of the Rev. A. M. Creery, and two or more in the employment of Mr. Malcolm Guthrie. It is also to be noted that the percipient power of Mr. Creery's children gradually evaporated and eventually entirely deserted them. "The Creerys had their most startling successes at first, when the affair was a surprise and an amusement, or later, at short and seemingly casual trials; the decline set in with the sense that the experiments had become matters of weighty importance to us, and of somewhat prolonged strain and tediousness to them." Is it hypercritical to draw attention to these facts; and if so, ought we not perhaps to be hypercritical? The authors are fully aware of the importance of their experimental basis. Accepting thought-transference as a working hypothesis, they must, if they would convince friendly sceptics, formulate its laws and enunciate its conditions.

Of voluntary phantasmal transference we have some examples. Two students of naval engineering at Portsmouth were in the habit of holding mesmeric sittings. One of them before he was hypnotised resolved to appear phantasmally to a young lady at Wandsworth. He is reported to have done so, having a vision of her, and appearing to her as a phantasm. In the later copies of the work an additional case is given. The Rev. C. Godfrey, as he retired to bed, "set himself to work with all the volitional and determinative energy he possessed" to stand at the foot of a friend's bed. He vividly dreamt he met her and asked if she had

seen him. 'Yes.' 'How?' 'I was sitting beside you.' The lady that same night woke and went downstairs for some soda-water, and as she returned saw Mr. Godfrey standing under the large window on the staircase. Accepting for the nonce the facts as stated, how are they explicable by thought-transference? What have they in common with the experimental basis?

The following involuntary case of ideal transference is more on the lines of the experimental results. Mr. J. G. Keulemans sees in his mind's eye, while engaged with some very easy work, a basket containing five eggs, three of which were notable eggs, smudged or very round or unusually oval. At lunch he sees two of these eggs on the table. And it turns out that his mother-in-law had placed five such eggs in such a wicker basket and had thought of sending them to him.

Lack of space prevents my illustrating here the many and varied forms of involuntary phantasmal transference. A great number of them are cases of what we may call direct transference, that is, transference from a single agent to a single percipient; a few are reciprocal, as when two sisters walking in the fields hear their names, 'Connie and Margaret,' called out, at the same time that their fever-stricken brother was exclaiming in his delirium, 'Margaret! Connie! Margaret! Connie! Oh, they are running by a hedge, and won't listen to me.' Some cases are collective, where the phantasm is seen by two or more percipients.

Let us now turn to the consideration of the conditions of transference. They clearly include (1) the state of the agent; (2) the state of the percipient; (3) the nature of the *rapport* between the two.

Although there are a few cases in which the agent is not in any abnormal condition, these would seem to be exceptional. In the great majority of involuntary phantasmal appearances the agent is undergoing some crisis, and in the greater number of these critical cases the crisis is the supreme crisis of death: "Of the 147 coincident dreams which are included in this book—as at least finding in telepathy, if it exists, their most natural explanation—no less than 78 have represented or suggested death". "It is in this profoundest shock which human life encounters that these phenomena seem to be oftenest engendered; and, where not in death itself, at least in one of those special moments, whether of strong mental excitement or of bodily collapse, which of all living experiences come nearest to the great crisis of dissolution. Thus among the 668 cases of spontaneous telepathy in this book, 399 (or, among 423 examples of the sensory externalised class, 303) are death-cases, in the sense that the percipient's experience was one of serious illness, which in a few hours or a few days terminated in death." And of these death-cases 9 per cent. are where the death was by drowning. Speaking of the time-correspondence in these death-cases, Mr. Gurney says: "Thus the fact that certain psychical phenomena form a

cluster, comparatively thick at first and gradually becoming more and more sparse, in the few days that follow deaths, would strongly indicate some common bond of connexion between the phenomena and the deaths, even if such a thing as telepathy in connexion with living persons had never been observed. But as a matter of fact, we find the cluster of cases as thick just *before* life has ceased as just *after*. Hence the presumption of a single common cause for the whole group." Yes. Could we but be sure that the record of the misses had been kept as carefully as that of the hits!

The state of the percipient does not seem to be in the generality of cases abnormal apart from the fact of percipiency. There is a somewhat marked preponderance of female percipients (58 per cent.). But this preponderance of female informants may, Mr. Gurney thinks, probably be due to their having, as a rule, more leisure than men for writing on matters unconnected with business. According to the state of the percipient the cases fall into four classes—(1) where the percipient is in the hypnotic condition; (2) dream-cases; (3) borderland cases, which occur on the dim borderland between sleep and normal wakefulness; and (4) where the percipient is normally wide-awake and in full possession of his or her faculties. Feelings of uneasiness or depression may precede or accompany percipience; but these may perhaps be regarded, on the transference-hypothesis, as telepathic in their origin.

In passing to the state of *rapport* between agent and percipient, we come to a point of central interest and importance. In the early stages of experimental transference the occurrence of the phenomena depends on a specific *rapport* previously induced by mesmeric or hypnotic operations. To the authors this mesmeric *rapport* (in some, at any rate, of its manifestations) seems nothing more than the faculty of thought-transference *confined* to a single agent and percipient, and *intensified* in degree by the very conditions which limit its scope. In the case of experimental ideal transference there does not seem to be any very definite bond between the agent and the percipient. For the rest, in phantasmal transference, the *rapport* has usually, we are told, been that of kinship or affection. But in the analysis of the table of numbered cases, Mr. Gurney says: "It will be seen that only in 47 per cent. of these cases is any blood-relationship known to have existed between the parties; and since in many cases the relatives of the percipient will have naturally belonged also to the circle of his intimate friends, it seems reasonable to conclude that consanguinity, as such, has little if any predisposing influence in the transmission of telepathic impressions". The bond of affection would thus seem to constitute the closest *rapport*. But Mr. Gurney regards collective cases as "strongly indicative of a *rapport* of a different sort—consisting not in old-established sympathy, but in similarity of immediate mental occupation. I suspect,"

he says, "that such a *rapport* might be induced by a common environment—by partnership in that particular piece of the 'life of relation' within which the hallucination happens to fall." In nine cases there seems to have been a previous compact between the parties that the one who died first should endeavour to make the other sensible of his presence; in one case the percipient had requested his brother to appear to him; and in one case, narrated by Miss Bird, the traveller and authoress, there was a promise on the part of the person who died. Then there seem some curiously anomalous cases where the phantasm is that of someone the percipient has never seen, but is more or less intimately connected with someone else present to whom, however, the phantasmal vision is not manifested. For example, Helen Alexander, maid to Lady Waldegrave, was lying ill of typhoid fever. Her fellow-servant had a vision of a person entering the room, whom she instantly felt to be the mother of the sick woman. She had a brass candlestick in her hand, a red shawl over her shoulders, and a flannel petticoat on which had a hole in the front. She subsequently learnt that the phantasmal visitant, petticoat and candlestick, exactly answered to the real articles. Perhaps, however, this case may be regarded as that of the direct transference of a vivid mental picture from the sick girl to her fellow-servant. Taking all the cases into consideration, it is difficult to formulate anything like definite laws of the *rapport*, unless the preponderance of the death-cases be regarded in that light.

I have drawn attention to the marked difference (especially the change of 'voice') between the ideal and the phantasmal cases; and this is a fact to which attention is as clearly drawn in the work itself. But it naturally suggests the pertinent question, How can these phantasmal phenomena be brought under the category of thought-transference? Mr. Gurney displays not a little ingenuity in correlating the two; and that for a good and valid reason. "Whatever my own surmises as to future discovery may be," he says, "in the present state of the evidence I feel as much bound here to prove the theory of thought-transference before admitting causes of an obscurer kind, as in a former chapter to prove the theory of unconscious physical indications before admitting the reality of thought-transference."

Making use, then, of the well-known psychological fact that the objects that we see are largely ideal constructions that we build up at the bidding of some suggestion external to ourselves, and that the details are added by the percipient from the accumulated stores of his own experience, Mr. Gurney brings it to bear upon the question of hallucinations, and points out that what is lacking in them is the suggestion from a real something external to ourselves. The definition of a sensory hallucination would thus be, to use his own words, "a percept which lacks, but which can only by distinct reflection be recognised as lacking, the objective basis which it suggests". No little stress is laid on the *originality*

of construction involved in every sensory hallucination, and a stepping-stone is thus laid to enable us to cross from ideal to phantasmal transference. For the difference, from the results of experimental thought-transference, which telepathic phantasms exhibit in representing what is not consciously occupying the agent's mind—to wit, his own form or voice—ceases to be a difficulty in proportion as the extent of the impression transferred from the agent to the percipient can be conceived to be small, and the percipient's own contribution to the phantasm can be conceived to be large. The details of the phantasmal appearance and the whole setting of the phantasmal picture may thus be drawn from the storehouse of the percipient's own memory, or may partake of the *bizarrerie* of what is literally a waking-dream. Where, however, the phantasm includes details of dress or aspect which could not be supplied by the percipient's mind, Mr. Gurney thinks it may be attributed to a conscious or sub-conscious image of his own appearance, or of some feature of it, in the agent's mind, which is telepathically conveyed as such to the mind of the percipient.

Still, granting all that Mr. Gurney would have us grant, there are great difficulties in applying the thought-transference hypothesis to a great number of the cases. Take, for example, the case before quoted of Mrs. Bettany's vision of her swooning mother. It is difficult to see how thought-transference can be made to explain this case. Or take the case of the lady whose black nurse saw a phantasm of the lady's brother who was dying in Tobago. The nurse did not know the brother, and the lady did not see the phantasm. I think that many students of the evidence presented in these volumes will find difficulty in applying in a considerable number of cases the hypothesis of thought-transference. One is almost surprised to find Mr. Gurney speaking quite so confidently as he does when, after giving a general criticism of the evidence and pointing out its various liabilities to error, he says: "What, then, is the likelihood that all these various causes—all these errors of inference, lapses of memory and exaggerations and perversions of narration—will issue in a consistent body of evidence presenting one well-defined type of phenomenon, free in every case from excrescences or inconsistent features, and explicable, and completely explicable, by one equally well-defined hypothesis?" Is the body of evidence altogether consistent? Does it present one well-defined type of phenomenon? Is it completely explicable by one hypothesis? And is that hypothesis well defined?

Mr. Myers cannot answer in the affirmative to all these questions. He is not able to rest content with the hypothesis of thought-transference. And in a "Note on a Suggested Mode of Psychical Interaction" he puts forward independent clairvoyance as an explanation of some at least of the phenomena. More than this, "correspondently with clairvoyant perception," he suggests,

"there may be phantasmogenetic efficacy". It would seem then that, in Mr. Myers's view, if I understand him, the percipient may visit in spirit scenes he has never visited in the flesh, and that his spirit may be visible as a phantasm to the human occupants of these scenes. Into the dimly-lighted spirit-land to which he thus beckons us I dare not follow him here.

In conclusion, let me repeat what I said before elsewhere. The hypothesis of thought-transference, ideal and phantasmal, and the evidence adduced in its favour, must be submitted to the most searching scrutiny and criticism, but it should not be met with easy and ignorant ridicule. Each case reported needs separate and individual consideration. Hence any sweeping criticism of the evidence *en masse* would be beside the mark. Messrs. Gurney and Podmore, who have interviewed many of the witnesses, are in a position to appraise the value of their statements to which no outsider may lay claim. The outsider must content himself with enunciating the truism that the amount of the evidence accepted by each reader as valid will largely depend upon his general opinion of the veracity of his kind. The evidence can only be rejected as a whole by one who is prepared to repeat at his leisure what David is reported to have said in his haste.

C. Lloyd Morgan.

La Psychologie de l'Enfant: L'Enfant de trois à sept Ans. Par Bernard Perez. Paris: F. Alcan, 1886. Pp. xi., 307.

In this volume M. Perez gives us a second instalment of his studies on the psychology of childhood. The earlier volume, *Les trois premières Années de l'Enfant*, took a general survey of the mental phenomena of this period by dealing successively with such heads as motor activity, sensation, faculty of acquisition, &c. The present work follows the same method. Only, since at this later stage the several directions of mental activity are more clearly marked, the author is able to take up these in something like a systematic order. Thus the volume proceeds to discuss the principal stages of intellection, as Memory and Association, Imagination, Abstraction, &c., and then to deal briefly with the Feelings and the Will.

As in the earlier volume, there is a judicious mixture of the analytic and the descriptive method. Thus, for example, in dealing with the laws of Association, we have first of all an exposition of the precise nature and function of each, and then an account of the special part played by the law in the acquisitions of the particular period considered. In the more analytic portion, M. Perez leans to a considerable extent on the authority of others, as Dr. Bain, Mr. Spencer and more recent writers. Yet he is by no means a mere reproducer of other men's ideas even here. Thus, in expounding the so-called law of Contrast, he suggests as the natural basis of the associations referred to

the impressive contrasts that occur in the everyday successions of natural events, as day and night, noise and silence, pleasure and pain, &c. It is not, however, in dealing with the more abstract principles of psychology that M. Perez shows himself at his best. He has studied the human mind more in nature than in scientific treatises, and his wide experiences enable him to reach many valuable generalisations of a less abstract character. As an example of this happy treatment of the more concrete problems of mind, I may refer to the section on the influence of the feelings on the attention, and more particularly the relation of sympathy to attention. Other illustrations of the same insight into the complexity of mental life are found in the treatment of the connexions between reasoning and action and reasoning and feeling.

The new volume, like its predecessor, seeks to support its generalisations by facts drawn directly from child-life. As might be expected perhaps, these are on the whole less striking and piquant than those which made the account of the first three years so entertaining. Still even the period between three and seven has its own peculiar charm, and M. Perez has done his best to make his readers feel it. He has evidently taken pains to collect a good number of illustrations, and on the whole they are pertinent and striking, though now and again their connexion with the particular point to be illustrated might, I think, be made somewhat clearer. It may be added that the author has supplemented the results of his observation of children by some interesting recollections of his own early experiences, and also by well-selected quotations from works of biography and fiction. These last are a feature that deserve special attention, seeing that psychologists as a rule ignore novels altogether. No doubt the novelist's creation is not so valuable scientifically as a real living character; but it must be remembered that the writer of fiction is bound to be a close observer of mental traits, and that it is reasonable to look in his works for illustrations of psychological truths. The citations from the stories of M. Daudet and of his wife suggest how much valuable material lies ready to the psychologist's hand in the higher departments of fiction.

In most cases it is a pleasure to be able to follow M. Perez to the conclusions he reaches. Yet there are one or two exceptions to this rule. Thus I find myself unable to accept the extremely smiling portait of the child which the author offers us under the title "L'enfant optimiste". "His imaginary griefs (he writes)—for he has some—are as rare or as shallow as his ideal in all things is limited. All the evils of which we exaggerate the importance, those improbable events of which we make certainties, those evils which come from our imprudence, from our misconduct, or from our laxity, and which compose ninety per cent. of our troubles, imaginary or real, the child knows not, dreads not;" and so forth. Of course there is a certain amount of truth in all this. But surely there is another side to the

picture. If the child is shielded partly by his ignorance and partly by our protection from many troubles that harass us, he is exposed to others from which we are free. Who shall venture to sum up the misery represented by the terrors of childhood? I know a case where a child was haunted by the fear of death so that he was unable to sleep at night, and this not because of anybody's painting the terrors of dying to his imagination, but as the result of his own reflections on the subject. Many children of a reflective turn have in view of the suffering that prevails among animals and men become, for the moment at least, pronounced pessimists. The fact is that children's ignorance, if it saves them from certain evils, exposes them to others, and that many things that fail to distress the minds of adults, just because they have grown used to them, are apt to excite poignant sorrow in the breast of a sensitive and imaginative child.

M. Perez is careful to tell us that he is writing a work on psychology, and not on pædagogics. At the same time the discussion of the mental development of children from the age of three to seven—that is to say, during the period of transition from the home to the school—necessarily trenches now and again on practical educational problems. Thus, for example, in describing the characteristics of children's memory, the writer deals separately with the scholar's memory (*mémoire scolaire*). Under this head he gives us some valuable observations on the progress of retentive power in a number of pupils attending a girls' school with which he is acquainted. He tells us at the outset "that the pupils who were most prompt to seize the prominent sides of objects and to indicate that they remarked them were also those who preserved the recollection of them longest". The author explains this by saying that "memory even in early childhood never functions alone, that it is or appears to be essentially connected with the vivacity of the perceptions and the exactitude of the judgments". This is a noteworthy result, for it is one thing to say that a child remembers best what he has observed in the best way; another thing, that the best and quickest observers are the most tenacious in their recollection. It is obvious that this point might very easily be settled if teachers would follow up the observations of M. Perez. Another point in the theory of memory, of no less direct bearing on education, is the manner in which the faculty improves with exercise in the period dealt with. The children referred to began to learn short lessons from about six or seven. During the first seven or eight months there was a distinct improvement in facility of acquisition, a lesson requiring at first 25 minutes taking at last only 20 or 15. This applies to the superior children. The first year disclosed clearly enough the differences among them in acquisitive power, both general and special. From the 7th to the 8th year the facility increased, though in a less marked degree, whereas the average tenacity remained stationary, a fact that tended still more to separate the

quick from the dull. The progress in facility, says M. Perez, was clearly due to exercise, for children coming fresh to school at this age managed in a number of cases to overtake and even to pass those who had had three or four years of schooling. It might be said, however, that the facts tell quite as much the other way—that is to say, bring out the *limits* of improvement due to exercise; and this result harmonises in a striking way with the conclusions respecting the effects of practice in improving sense-discrimination, active response to stimulus, and other actions reached by recent psychological experiment, and suggests that in each case progress may really be due to a more perfect adjustment of the attention. This whole account of the progress of the learning faculty in a school may be specially recommended to teachers as much as to psychologists. It is to be wished indeed that it may stimulate some of the former to attempt a similar table of pupils' progress for their own and others' use. It would be a real boon to the psychologist to have carefully prepared school statistics showing the changes in the acquisitive power at different ages, and the variations observable in these among different children.

JAMES SULLY.

Ethik. Eine Untersuchung der Thatsachen und Gesetze des sittlichen Lebens. Von WILHELM WUNDT. Stuttgart: F. Enke, 1886. Pp. xi., 577.

That the paradox of the identity of virtue with knowledge no longer finds defenders is rightly regarded as an advance in psychological and ethical theory. There seems to be some danger, however, that the opposite paradox of the identity of thought with will may come to take its place. Prof. Wundt's doctrine of "Apperception," as set forth in his *Logik*, is, in truth, an elaborate statement of this paradox. The passive material of thought given in association is supposed by him to receive all its distinctive characters as thought from an act of "apperception" having the essential nature of an act of will. Under the name of Attention, this activity of apperception is assuming with some recent English psychologists the central position that it has in the psychology of Prof. Wundt. The final judgment on the apperception-doctrine can, of course, only be passed by psychologists after examination of it on its merits; but if, as we may suspect *a priori*, the modern, like the ancient, paradox is a one-sided expression of the facts of the mental life, we should expect it to fail, as that was at length seen to fail, in its application to practice. Prof. Wundt's ethical treatise furnishes us with the desired opportunity of testing his psychological doctrine. For there can be no doubt, from the very beginning of the book, that the connexion of his ethical with his psychological principles is as close as he conceives it to be.

In the Introduction (pp. 1-14) ethics is defined as the supreme "science of norms"; logic, in the last resort the only other "Normwissenschaft," being subordinated as "the ethics of thinking". The best method of arriving at the principles of morality is found to consist in a combination of the empirical and the speculative methods. The author proposes to begin, therefore, with an empirical statement of the facts first of the historical development of morality itself, and then of the philosophical systems of ethics which have sprung out of actual morality and reacted on it. After the "inductive preparation" of the first two sections (i. "The Facts of the Moral Life," pp. 15-233; ii. "Systems of Moral Philosophy," pp. 234-371) comes the systematic construction of the remaining two, of which the first is concerned with principles (iii. "The Principles of Morality," pp. 372-510), the second with their application (iv. "The Departments of Moral Life," pp. 511-577).

Section i. is, in effect, a treatise on anthropology in relation to ethics. The most general results of the author's investigation are a "law of three stages" of moral development and a "law of the heterogony of ends". According to the first of these laws, religious ideas are in the beginning the presiding influence in the development of morality; afterwards, moral ideas detach themselves and become independent; finally, there is a return to the primitive unity of the spiritual life, "general human aims" are formed, and the differences among national moral conceptions tend to disappear. The "bearer" of religious and moral conceptions is "the general consciousness". The primitive social group is "the tribe," from which proceeded in diverging development the narrower circle of the family and the wider circle of the state. At first religion was not distinct from morality, or morality from law and custom, or these from each other. Religion, nevertheless, is to be placed first in the order of development, because, while moral customs for the most part can be traced to acts of religious ceremonial, the origin of religion, like the origin of language, escapes us. Those thoughts and feelings are religious that are directed towards a world in which ideals are realised. When man has made for himself religious ideals,—of which there are two kinds, those that finally take shape as belief in a perfect personality, and those that culminate in the thought of a "moral world-order," — these ideals, by the authority they exercise, modify social customs; and so, under their influence, morality is formed. It is not to be supposed that moral rules were made with any view to their utility either to the individual or to society. The assumption that morality was thus consciously developed vitiates all the ordinary theories, which err by ignoring "the heterogony of ends". Motives now intelligible are unquestioningly assumed in order to explain the actions of the men of former times. The origin of the State, for example, is supposed to be explained by the need men had of protection. In

reality, protection was first attained as an actual result and afterwards perceived to be desirable. Practical results go before theoretical views. The ends are not the causes of development, as is obvious when it is considered that the later stages of development are unknown to the earlier (pp. 179-80). Typically, moral customs are outgrowths from religious ceremonial. That which is rendered to the gods begins to be rendered to powerful men, then to equals, and lastly to men in general; the custom itself all the time undergoing modifications. Afterwards, when customs are reflected on, they are seen to serve various useful purposes, and are supposed to have been invented or evolved for those purposes. As a matter of fact, the purpose was never thought of until the retrospective period. Again, the exigencies of practical life bring about new modifications of custom. New advantages are thereupon seen to be gained, and the new rules of action are consciously followed for the sake of these advantages; but the end that is now consciously sought was not originally the end. Similarly, a person whose aims are egoistic may find that, through the social interconnexion of all human action, his efforts are productive of public good, and may be stimulated to new exertion by the thought of this good which was not at first consciously aimed at. In all such cases the result is that yet other ends are attained which had not been thought of before. For as soon as the attainment of any class of ends has been realised and they are consciously sought, new changes in practice make possible new views of what is attainable, and so on indefinitely. Thus is manifested in social action, along with the law of "the heterogony of ends," the law of "the unlimited growth of forces". The individual reacts on society; but to do this effectively it is necessary that he should be the organ of the "general mind" or "will," which has not yet come to full consciousness in others. Merely individual modes of action have little influence. "Individual customs," for example, are either suppressed by the general will or are accepted as "fashion," the least dignified and the most temporary of all forms of custom.

A whole series of objections to Prof. Wundt's account of the origin and development of morality may be summed up in a sentence. If, as is said, the theories of "the 'Aufklärung' of the 17th and 18th centuries" ascribed too much rationality to man, or too much influence to reason, does not this modern theory ascribe too little? Its merit is in the firm grasp that Prof. Wundt has of the fact of the slow social evolution of human habits and modes of thought. At first it seems indeed that he does not see the necessity of explaining social evolution by its causes and conditions. He rejects all theories which imply that progress is due to the conscious pursuit of ends; and of "natural selection" —beyond, perhaps, a casual allusion—he says nothing. The reason of this is that he has a doctrine of his own, which makes all such explanations superfluous. In his view the evolution of

societies needs no other explanation than the "law of the unlimited growth of forces," or the "principle of increasing psychical energy". Too much influence, it may be objected from Prof. Wundt's own point of view, is ascribed to ideas of the supernatural. For if, as he insists, illusions may proceed from reality, but out of mere illusions no reality can come (p. 340), how can moral conceptions, which he does not hold for illusions, be created by the non-existent gods of man's "personifying apperception" (p. 53)? The deduction of disinterested from egoistic action, he goes on to say (p. 340), reminds us in a measure of the 18th century derivation of religions from the frauds of priests. Does not Prof. Wundt's own account of the origin of morality in a measure remind us of the same theory? It may be allowed, however, that by his contention for a "primitive altruism," in which as well as in "religious reverence" morality has its origin, he does, in the later sections, correct the theory of the exclusively religious, or mythological, origin of morality, which seems to be implied in the first.

From the foregoing summary much has of necessity been omitted that is of more interest in relation to comparative mythology and the theory of prehistoric origins generally than to constructive ethics; and where the author's theses themselves have been indicated, it has been impossible to give any idea of the labour that has been spent on their development. It will also be necessary, for the sake of going on rapidly to the constructive theory, to pass over in silence the greater part of the next section. What is of most importance here is to note Prof. Wundt's conclusions as to the latest phase of philosophical ethics. In the ethical theories of the 17th and 18th centuries, "individualism," he finds, worked itself out. The Kantian idealism, culminating in Hegel, brought about the restoration of the Platonic and Aristotelian doctrine that the State is "more than a sum of individuals," that it has an end of its own different from all merely individual aims. The "Historismus," or "Universalismus" of Hegel, however, tended to deprive the individual of all meaning except that of a "bearer" of the universal idea manifested in history. It needs to be qualified by the individualism of the "Aufklärung"; and it needs a scientific foundation.

Little objection can be taken to this as a general statement; and Prof. Wundt shows, though not adequately, that "objective evolutionism"—the conception, that is, of an evolution of common knowledge and morality from the basis of language and social custom, as distinguished from the "subjective evolutionism" that tries to explain the transmission of ideas by heredity alone—has been arrived at in England independently of the Kantian development. Mr. Stephen's *Science of Ethics*, he finds, is an expression of "objective," Mr. Spencer's *Data of Ethics* of "subjective" evolutionism. When he comes to details, however, there is much in his account of English moralists that is open to the charge of injustice or misapprehension. The perverting influence is to be found partly

in theories of what the course of English thought, or the views of English thinkers, ought to be according to some historical scheme, partly in the occasional use of terms in senses for which the reader is not prepared. When, for example, egoism is described as traditional in English ethics, we may be disposed to protest. The protest becomes needless when we discover that to seek the happiness of another person, or of any number of other persons, is, in Prof. Wundt's opinion, just as "egoistic" as to seek one's own happiness (p. 428). Utilitarianism is only an "enlarged egoism". There is no escape from egoism except in work for social aims, which are realised in no assignable individual or sum of individuals. For the rest, the "greatest happiness principle" can furnish no motive to action. Self-sacrifice "for another," or for "ideal ends," such as "Fatherland," is conceivable, but "it has never come to pass, and will never come to pass, that anyone gives up anything in order that the sum of happiness that there is in the world may become greater" (p. 339).

In the concluding chapter of this historical section, ethical systems are classified "according to motives," and "according to ends". The last named classification, which the author regards as the more important, may be transcribed. The ethical systems are thus divided:—I. The Authoritative Moral Systems; these, again, fall into two kinds, *viz.*, political and religious "heteronomy"; the ultimate end of these systems may be identical with the end of one of the "autonomous" systems. II. The Autonomous Moral Systems: (1) Eudæmonism, (*a*) Individual Eudæmonism or Egoism, (*b*) Universal Eudæmonism or Utilitarianism; (2) Evolutionism, (*a*) Individual Evolutionism or Perfectionism, (*b*) Universal Evolutionism or Historicism (p. 353). The moral precepts of religion, as well as the political order, Prof. Wundt remarks in discussing this classification, although themselves products of moral ideas, are in the earlier stages of civilisation "indispensable general means of education to morality," and remain so to a certain extent, perhaps permanently. Yet scientifically it is an inversion of the true order of causation to place them first in the human consciousness (p. 355).

The first chapter of section iii. ("The Moral Will") begins with some theoretical preliminaries on will and consciousness in general. "Development of consciousness" is declared to be essentially "development of will" (p. 375). "Feelings and desires" are movements of will that do not arrive at their full expression in external activity. Will is incapable of resolution into anything simpler. Voluntary movements cannot arise out of reflex and automatic movement; on the contrary, mechanical reflex movements arise out of voluntary movements. Accordingly, in the lowest animals there are unmistakable voluntary actions before there are reflexes of clearly purposive character. Prof. Wundt calls his own theory of the will "the autogenetic theory," opposing it to "the ordinary or heterogenetic theory".

It differs from "the ordinary theory" (1) by recognising that an external activity of will must be preceded by an internal activity, "and that generally every activity (Thätigkeit) of consciousness bound up with the immediate feeling of activity (Activität) bears in itself the essential marks of an activity of the will (Willensthätigkeit)"; (2) by recognising as the simplest form of will those actions which are preceded by no conflict of motives, but follow immediately on a single motive—the motive itself being an act of will in an earlier stage. "We characterise with Leibniz as *apperception* every inner activity that has bound up with it the feeling of spontaneity. Those external voluntary activities which follow under the immediate operation of a single and sole motive we name *impulsive actions*" (p. 380).

The human will or consciousness, so far as it is peculiar to a single personality, is an "individual will"; so far as it is common to all the individuals of a society it belongs to a "general will". The inability of the "Aufklärung" to recognise "the general will" was a consequence of "psychical atomism" or "the substance-theory of Descartes". When the notion that consciousness must inhere in an individual soul or substance is got rid of, and its reality is seen to consist simply in "actual psychical life itself," and in nothing else, there is no longer any theoretical obstacle to the admission that the general will has equal reality with the individual will, and it becomes possible to escape from the egoism of the individualistic doctrine, the "ethical atomism" bound up with its "psychical atomism".

For the explanation of psychical development a "principle of increasing psychical energy" is required "in complete opposition to the equivalence-principle" of physics. A consequence of this principle is that past psychical events can be explained by their causes, while future psychical events cannot be predicted. For the effects of volitions, according to the principle, are "determined by" causes, but not already "contained in" those causes. The author puts forth his theory as at once a "free-will" doctrine and a doctrine of "psychological determinism". The older determinism and indeterminism, both alike, erred in that they attempted to apply the law of physical causality to mind; one doctrine affirming and the other denying that acts of will are "caused". The truth is that they are always caused, but not according to the physical law of "the equivalence of cause and effect". Although the effects of a voluntary act can never be predetermined from its conditions, past results of volition can be explained from their causes. Indeterminism, in any case, must be rejected "on moral and religious grounds" (p. 409). Teleology in the organic world is to be explained by the direct action of the will on organic forms (p. 408). The author, nevertheless, does not believe in the Cartesian *influxus physicus* (p. 402, note). The whole material world is the creation of the mind; it forms a realm within the realm of spirit; and so physical causation is subordinate to psychical causation (p. 403).

"Man acts freely in the ethical sense when he follows only internal causality" (p. 410). The peculiarity of the conscience consists not in superiority to all motives, but in determination by "imperative motives". "Impulsive motives" are turned into "imperative motives" by means of (1) external constraint, (2) internal constraint, (3) feelings of permanent satisfaction, (4) the representation of a moral ideal of life. The religious shaping of moral ideas, it is repeated, goes before every other (p. 423). The "external constraint" of religious commands precedes political constraint. Similarly "the imperative of internal constraint exercises its effects" first "through the relations of the religious community". "The imperative of enduring satisfaction creates for itself, by the prospect of eternal rewards and punishments, the highest motives that in this form can exist." Finally, "the moral ideal of life" also is capable of assuming a religious form by its identification with the life of a historical person. Religion has all this influence as "educator to morality," because it is itself "the concrete sensible embodiment of moral ideals" (p. 424).

Ethical writers have been accustomed to treat of "goods," "virtues," and "duties". For these terms Prof. Wundt proposes to substitute "moral aims," "moral motives," and "moral norms". These are respectively the subjects of the remaining three chapters of his third section. Beginning with the problem of the ethical end, he decides that "the acting personality as such is never the true object of moral action" (p. 428). "The foreign *Ego*" can no more be the last aim of morality than our own *Ego*. Two social aims alone are left as "the true objects of the moral will," *viz.*, "public welfare" and "general progress". "Subjective feelings of happiness" have no "universal value," and so can have no part in the moral end. The "general human aims" are "objective psychical values". "Here also the principle of the heterogony of ends and the law of the unlimited new creation of psychical products penetrate all occurrence" (p. 432). "Be the direct aims that the individual pursues never so limited, they always overpass their immediate end, and lose themselves at last in the immeasurable stream of development of human mind" (p. 433). "The *last* aim of moral effort thus becomes an *ideal* aim, never attainable in reality" (p. 434). "The only sufficient, but also the fully convincing ground of belief in a moral ideal lies in the impossibility of setting a limit to mental and moral development, or, which would come to the same thing, of thinking its complete annihilation" (p. 446). The objective ground of punishment is that the actions punished oppose moral development and so tend to annihilate the ideal (p. 436). Motives instead of ends being in question, "every disposition is immoral which consists in an uprising of the individual will against the general will" (p. 448). "As crime consists in an uprising of the single will against the general will, so punishment is the natural reaction of the latter against this uprising" (p. 458). "Ethical norms," like ethical ends, are of three chief kinds—"individual," "social" and

"human". The general rule in cases of conflict is that the narrower must yield to the wider norm (p. 469). In order to gain a "highest regulative idea" we may think of the ideal as unchanging; but mental representations of it are in unceasing development. "That this development is the last moral aim we can comprehend, in which all individual aims disappear, remains the universal postulate that finds in the historical shapings of ideal problems its particular embodiments" (p. 483).

The basis of Prof. Wundt's ethical system is evidently—apart from his theory of Apperception—the doctrine of Evolution, which has taken form for him especially in the ideas of human progress and of "the general mind". Unfortunately, these ideas, in Prof. Wundt's mode of conceiving them, seem to have become inextricably mixed with illusory elements. They are at least expressed in the form of very disputable "laws". He also tries to accomplish too much with the idea of progress. It is clear that the moral ideal cannot be defined in terms of "progress"; for in order to know that progress exists we must both have an ideal and know that the movement of things is towards it and not away from it. To make plausible his assertion of a constant and unbroken advance, Prof. Wundt requires a psychological "law of non-equivalence"; and he has to ignore degeneration and dissolution. The effective addition made by the doctrine of evolution to the material of constructive ethics is really much less in the idea of progress than in the new precision given to the conceptions of "social organism" and "general mind". It is a merit of Prof. Wundt's book to have laid special stress on this last conception. In the application of it, however, the weakness of the speculative construction becomes more than ever apparent. This weakness is due essentially to the transformation of "mind" into "will," and so may be traced to the doctrine of Apperception. The question is inevitable, Why should one will submit to another, the "individual will," for example, to the "general will"? From Prof. Wundt's point of view, this question is unanswerable; for he has suppressed all reference to "subjective feeling," and he has made the appeal to reason useless by an unlimited extension of his law of "the heterogony of ends".

The concluding section is divided into four chapters, treating respectively of "The Single Personality," "Society," "The State," "Humanity". Here, as in the rest of the book, in spite of what is promised as to concessions to "individualism," Prof. Wundt's "general will" seems to leave little room for any other will. "The social order," he says, "is not a creation that is there for the sake of individuals; on which account also it needs no justification from the services it renders to the individual" (p. 540). This is certainly quite consistent with the principle of "the general will" as it is here laid down. In the eyes of some readers such a corollary will be of itself sufficient to condemn that principle.

THOMAS WHITTAKER.

VII.—NEW BOOKS.

[*These Notes (by various hands) do not exclude Critical Notices later on.*]

The Factors of Organic Evolution. By Herbert Spencer. Reprinted, with additions, from *The Nineteenth Century.* London: Williams and Norgate, 1887. Pp. iv., 76.

"Though the direct bearings of the arguments contained in this Essay," Mr. Spencer says, "are biological, the argument contained in its first half has indirect bearings upon Psychology, Ethics, and Sociology. My belief in the profound importance of these indirect bearings, was originally a chief prompter to set forth the argument, and it now prompts me to reissue it in permanent form." In the first half, after describing his original acceptance of the Lamarckian doctrine of evolution, and the enlarged view of the factors of evolution that was the consequence of the publication of the *Origin of Species*, he goes on to ask whether the process brought into view by Darwin, taken alone, accounts for organic evolution, as is now supposed by many naturalists. The answer is that "utterly inadequate to explain the major part of the facts as is the hypothesis of the inheritance of functionally-produced modifications, yet there is a minor part of the facts, very extensive though less, which must be ascribed to this cause". Darwin himself came to recognise this more and more, and there are reasons for thinking that the reaction displayed in his later writings ought to be carried further. But if, "along with inheritance of useful variations fortuitously arising, there has been inheritance of effects produced by use and disuse; do there remain no classes of organic phenomena unaccounted for?" To show that there is still another factor of organic evolution is the object of the second half of the Essay. This third factor is that which is so prominent in the *Principles of Biology*, *viz.*, the direct action of the inorganic environment. Both inductively and deductively this direct action is found to be "the primordial factor of organic evolution". As a name for that effect of external causes which depends on a struggle among organisms, Mr. Spencer's own term "survival of the fittest," as well as "natural selection" "calls up an anthropocentric idea" (p. 41). For the purpose of ascertaining their causes, organic phenomena should be contemplated simply as "groups of changes". Human ideas of "fitness" and "unfitness" are then seen to be inapplicable, and it is recognised that natural selection "could do no more than take advantage of those structural changes which the medium and its contents initiated". What then are the relations of the three factors? This is the subject of a speculation at the end of the Essay (pp. 72-5) by which the view Mr. Spencer had formerly arrived at, *viz.*, that natural selection is most important in the earliest stages of evolution, "direct adaptation" in the later (see, for example, *Biology*, § 170) is made more precise. Three stages are now recognised, in the first of which the most important factor is that which has been called primordial, in the second "natural selection," in the third "functional adaptation". The stage in which functional adaptation, constantly rising in importance as activity and complexity of life increase, becomes the chief factor, has been reached by civilised men, among whom such aid as survival of the fittest gives is "usually limited to the preservation of those in whom the totality of the faculties has been most favourably

moulded by functional changes". It is from the point of view here attained that applications to psychology, ethics and sociology, briefly indicated in the preface, would be made, of which it is impossible to exaggerate the importance.

The Origin of the Fittest. Essays on Evolution. By E. D. Cope, A.M., Ph. D. (Heidelberg), Member of the United States National Academy of Sciences; Correspondent of the Royal Bavarian Academy of Sciences. London and New York: Macmillan & Co., 1887. Pp. xix., 467.

This is a book that ought not to be overlooked either by naturalists or by those who are interested in the philosophical aspects of evolution. A majority of naturalists will probably think it carries the Lamarckian reaction against Darwinian explanations too far; and the author's metaphysical expressions are sometimes unguarded; but, both in its general philosophical views and in its explanations of details of structure, it offers interesting and valuable suggestions, worked out with adequate knowledge of the whole subject. Starting from the position that "survival of the fittest" can only explain why variations persist, not how or why they originate, the author puts this question: What is the *origin* of the fittest? His most general answer is—"addition of parts by increase and location of growth-force, directed by the influence of various kinds of compulsion in the lower, and intelligent option among higher animals" (p. 40). The "influences locating growth-force" are further divided into "physical and chemical causes," "use" and "effort" (p. 195). Evolution of organisms takes place according to the laws of "acceleration and retardation," and of "the unspecialised," the last of which in particular has important bearings on mental evolution. "The doctrine of the unspecialised teaches that the perfection produced by each successive age has not been the source or parent of future perfection. The types which have displayed the most specialised mechanism have either passed away, or, undergoing no change, have witnessed the progress and ultimate supremacy of those which were once their inferiors" (pp. 233-4). "The predecessors of all characteristic or specialised types have been unspecialised or generalised types" (p. 396). Consciousness is only possible to matter which has not fallen into fixed and automatic relations of its atoms (pp. 418, 442). Protoplasm, the author tries to show by chemical considerations, is such an "unspecialised" form of matter, but not necessarily the only one. "In the highest form of development, that of brain mechanism, automatism is the enemy, and consciousness the condition of progress" (p. 402). Unconscious acts have been derived from conscious acts by organisation; and "the vegetative and other vital functions of animals and plants are a late product of the retrograde metamorphosis of energy," which, like matter, passes from an unspecialised to a specialised state. "Automatism then represents a condition of 'lapsed intelligence' and diminished life." "Free-will," admitted as a means of accounting for "the unknown in moral progress," is comparable to "the apical bud of a growing tree" (pp. 239-40). Only a few of the author's more general speculative conclusions have been given here; but the whole book deserves study.

Luck, or Cunning, as the Main Means of Organic Modification? An Attempt to throw additional Light upon the late Mr. Charles Darwin's Theory of Natural Selection. By Samuel Butler, Author of *Life and Habit, etc. Op.* 8. London: Trübner & Co., 1887. Pp. ix., 328.

Mr. Butler's *Op.* 8, while it has all the brilliant literary qualities of his early work, is at the same time perhaps the most serious of his contribu-

tions to evolutionary speculation. The "two main points" on which he has been "insisting for some years past" could not be better stated than they are in the opening sentence, *viz.*, "the substantial identity between heredity and memory, and the re-introduction of design into organic development"; this "design" being the Lamarckian or "Erasmus Darwinian" design, or "cunning," of the organism itself, as opposed at once to the Paleyan or external design and to the "luck" of "Charles Darwinian" spontaneous variation. If Mr. Butler wishes to secure for these ideas all the recognition they deserve, he should present them thus separately, as elements in a complete theory of evolution. Instead of this, although he sees clearly that they are two ideas and not one, he insists on presenting them fused into the single theory of *Life and Habit*, which, however many incidental points he may make against the scientific men, after all cannot be accepted as an adequate theory. Hering's identification of heredity with memory is of course just as consistent with Darwinian as with Lamarckian evolution, both of which equally imply inheritance of variations, "spontaneous" or "functional" as the case may be; and the explanations of Darwin and of Lamarck, as Mr. Spencer is now showing, are not mutually exclusive. For Mr. Butler to admit this, however, would spoil the fun. He would not be able, out of Mr. Spencer's opposition of "inheritance of functionally produced modifications" and "survival of the fittest" (p. 46) to make the antithesis of "survival of the fittest" and "*heredity*"! The same antithesis, with the assumption that heredity is the special property of the Lamarckian doctrine, is constantly appearing in the anti-Darwinian chapters. There are one or two passages (*e.g.*, pp. 262-3) from which it may be inferred that the perversity of the chapters just referred to is not altogether unconscious. It is worth while to point out that the really strong resemblance between Hering's and Mr. Butler's theory of memory and instinct and certain passages recently selected by Mr. Spencer from the *Principles of Psychology* is not, where Mr. Butler looks for it (and of course does not find it), in the identification of the *subject* of "race-experience" and personal experience, but in the identification of their *characters;* both tending to become unconscious as they are perfected, and by the same psychological law. The superiority of "unconscious" mind, which was so prominent in *Op.* 3, is an idea to which the author does not now recur. He seeks rather to prove that there is *conscious* mind everywhere. Perhaps he thinks he has worked the former vein sufficiently. In his character of the restorer of mind to the universe, he is able to write a delightful description of the collapse of "the protoplasm boom" "in the autumn of 1879" (pp. 146-7). The most remarkable feature of his present work, however, is not the criticisms of men of science, but the Heraclitean theory developed in c. xi. and in single passages of other chapters, notably pp. 28-31, 43-4, 75-9, 313-17. May his readers indulge the hope that this theory will not become to him "a white elephant," as he confesses the theory of *Life and Habit* has been?

Social History of the Races of Mankind. Second Division: 'Papuo- and Malayo-Melanesians'. By A. Featherman. London: Trübner & Co., 1887. Pp. xviii., 507.

This second division of the author's herculean enterprise, issued after the fifth and the first (see Mind vii. 153, x. 300), appears after a shorter interval than separated the two others, and encourages the hope that remaining volumes (of which there should be five, according to what was said in the first) may see the light in progressively shorter times. Yet it is not surprising that the publication of matter that has to be collected by such wide and laborious research and reduced to sufficiently uniform

statement for purposes of comparison should be a somewhat slow process. There is nothing to be added here to what has formerly been said of the author's extraordinary patience and diligence in the composition of a work which he now describes (incidentally) as a "history of peoples in their social capacity, including their manners and customs, their government, their religion, their superstitions, and their literary, artistic and scientific advancement," or, more shortly, as "a universal history of civilisation". That, as such, it differs from Mr. Spencer's *Descriptive Sociology*, as he now claims, and not less from the philosophic *Principles*, may readily be granted without prejudice to a remark previously made in these pages, that, when he formerly called it "a manual of Sociology—a science as yet non-existent," the author did not appear sufficiently to recognise the constructive work already done on that field. Another remark that was then hazarded, as to the value of his authorities for facts, is, however, to be unreservedly withdrawn. It was made at the time upon a too cursory inspection of the volume under notice, and cannot now be in the least upheld against the evidence afforded, that when he rejects later for earlier records of travel it is done upon a deliberate and well-grounded opinion of their relative merit.

Life of Giordano Bruno the Nolan. By I. Frith. Revised by Prof. Moriz Carrière. ("The English and Foreign Philosophical Library," Vol. XXXI.) London: Trübner & Co., 1887. Pp. xii., 395.

This long-expected book, although containing much reference to Bruno's works and philosophy, claims attention at present more as a biography than as a philosophical study. The change of title from that first announced —"The Life *and Works* of Giordano Bruno"—may be taken as an indication that the original purpose has been only partially carried out; but we are told that "it is in contemplation to print a second volume, containing a summary of the works, with the documents of the trial and other confirmatory evidence". The biography is interestingly written and accurate in its facts; and if it is sometimes a little filled out by conjecture the reader is supplied with material for an independent judgment. It relates practically everything that is known of Bruno's life, including the results of the latest documents of all,—those discovered in the archives of Geneva by M. Théophile Dufour. These documents (published by M. Dufour in 1884) fix Bruno's residence at Geneva in 1579, and make it five instead of only two months. For the rest they show that his aversion from Calvinism took an active form, and explain sufficiently why he quitted Geneva so early; relating some proceedings of the Council against him "for having caused to be printed certain replies and invectives against M. de la Faye" (then Professor of Philosophy in the Academy), in which "he had erred in the doctrine and had called the ministers of the Church of Geneva *pedagogues*". The volume has been revised by Prof. Carrière, and appears simultaneously with the new edition of his own *Philosophische Weltanschauung der Reformationszeit*, mentioned later on in the present No. The general view taken in it of Bruno's philosophical position is identical with Prof. Carrière's, of which something will be said in the promised Critical Notice of his work. In detail it does not simply follow any previous exposition, but is the result of independent study of Bruno himself, of what has been written on him, and of his period. The critical part contains many valuable hints towards the understanding of his relations to later philosophy, and shows real appreciation of his character and writings. Before saying more, it will probably be best to wait for the appearance of the second volume, when we may expect further development of suggestions such as are made on pp. 45, 158, etc. The author has appended to

the Life (1) a list of "the existing works of Bruno" with enumeration of editions and short description of the contents (pp. 310-339), (2) a notice of the Noroff collection of unpublished MSS. (pp. 343-369), (3) a list of "the lost works of Bruno" (pp. 373-377), (4) an "alphabetical list of authorities" (compiled by Mr. Wm. Heinemann), from which hardly any book or article dealing with Bruno can have been omitted (pp. 379-388), (5) the letter of Scioppius (pp. 389-395). The volume is inscribed "to the memory of Nicholas Trübner, the faithful friend and kind adviser who proposed the subject of this book, whose interest in it continued unfailing to the last hours of his life, and without whose aid these pages could never have been written".

Life of Antonio Rosmini Serbati, Founder of the Institute of Charity. Edited by WILLIAM LOCKHART, Procurator of the Order in Rome, &c. 2 vols. London: Kegan Paul, Trench & Co., 1886. Pp. xxxiii., 360; xi., 352.

It is necessary to return, however briefly, to this book, which was little more than mentioned in the last No. of MIND, p. 135. It gives not only, in simple and straightforward style, all the information that could be desired about the life and character of the saintly man, but includes in the few chapters devoted to the thinker a translation of two pieces from Rosmini's own hand (ii. 242-72) that have but recently seen the light in the Italian original. In these he first sketches the history of modern philosophy from Locke, defining his own position and especially his relation to Reid and Kant, and then gives under nine heads a short and precise summary of his philosophic system. With the succeeding chapter, showing the harmony between Rosmini and St. Thomas in an essay (pp. 275-303) borrowed from the late Bishop Ferrè of Casale in Piedmont, the reader has thus a convenient means of judging of the general import of a system of thought more than ordinarily voluminous in its elaborated form. It may remain doubtful whether the countrymen of Reid have much to learn, except in point of curious erudition, from the volumes which the piety of Rosmini's English translators has been making accessible to them, but after this *Life* there can be no question of the supreme interest attaching to him as a man of spiritual gifts. Mr. Cotter Morison has been saying that the saint, like the genius, is born so. Rosmini was a born saint, as every line of his biography tells. It tells also, what few can have known, how, or at least how much, the widespread Roman Catholic missionary movement in this country during the last half century had its spring in the charitable faith of the secluded Italian thinker.

The Service of Man. An Essay towards the Religion of the Future. By JAMES COTTER MORISON. London: Kegan Paul, Trench & Co., 1887. Pp. xxxi., 318.

The greater part of this most readable book—where an historical estimate (mainly unfavourable) is made of the influence and work of Christianity in the world—lies out of the province of MIND, but incidentally, and more especially in a final chapter "On the Cultivation of Human Nature," there is a strain of philosophical observation claiming recognition. The moralising effects of Determinism are set forth with peculiar force. A very gloomy Preface (pp. xxx.), bringing into sharp and exclusive relief certain elements of imminent danger in the social condition of the more advanced nations, has much in it that should be laid to heart by all serious-minded people at the present time, but reads rather curiously by the side of the generally optimistic pages of the body of the book.

Anatomy and Physiology in Character. An Inquiry into the Anatomical Conformation and the Physiology of some of its Varieties; with a Chapter on Physiology in Human Affairs—in Education, Vocation, Morals and Progress. By FURNEAUX JORDAN, F.R.C.S. London: Kegan Paul, Trench & Co., 1886. Pp. xi., 185.

The author puts forth as the result of long observation a classification of men and women into three types—the "shrewish," the "non-shrewish," and the "intermediate" or mixed. Of these the second is not merely the negation of the first, but is a distinct type. After a chapter on "Physiology in Human Affairs" (c. i.), and an account of some characteristics of "assaulted wives in hospitals," in which the "clue to character" that is the starting-point of the inquiry was discovered (c. ii.), he goes on to describe the physiological characters of "the shrewish woman," "the shrewish man," "the non-shrewish woman," and "the non-shrewish man" (cc. iii.-vi.), and "the Anatomy of Shrewish and Non-shrewish Persons" (c. vii.). Then follow some "Observations on the Physiology of Shrewishness" (c. viii.) and a "Note on Shrewishness and Non-shrewishness in Literature." The words "shrew," "non-shrew," &c., the author says, "are used in these pages with great reluctance. They would not be used at all if any other words conveyed the meaning which they are intended to convey. They are not used as nicknames, not even as words of disparagement; they are used in a strictly scientific sense, to denote special phases of character, and the union of such special phases with certain anatomical and physiological peculiarities" (p. 63). As a consequence of the knowledge gained, "human intelligence and human volition" may "interfere in the evolutionary process" to the great advantage of the race, if, "by common consent, shrewish men and women," for reasons explained at length, are "left out in the marriage arrangement". Perhaps the author has not considered carefully enough, for one thing, whether his classification of human types is exhaustive, but the book is full of varied interest.

Scottish Metaphysics reconstructed in accordance with the Principles of Physical Science. By the Writer of "Free Notes on Herbert Spencer's *First Principles*". Edinburgh and London: W. Blackwood & Sons, 1887. Pp. xiv., 244.

This treatise, setting forth the kind of theory described in its title on the basis of a criticism of Hamilton's *Metaphysics*, is not a happy performance in point of style, but yet appeared to call for some amount of detailed notice. This is only deferred.

English Composition and Rhetoric. Enlarged Edition. Part First. "Intellectual Elements of Style." By ALEXANDER BAIN, LL.D., Emeritus Professor of Logic in the University of Aberdeen. London: Longmans, Green & Co., 1877. Pp. xix., 310.

On Teaching English: With detailed Examples, and an Enquiry into the Definition of Poetry. Same Author, Publishers, &c. Pp. xiii., 256.

The author's *Rhetoric*, first published in 1866, is being subjected to a radical transformation, to be completed by the publication later on of another volume, as Part Second, dealing exclusively with the "Emotional Qualities of Style". While the work in its original form bore abundant traces of the psychologist's hand, these have now become much more deeply marked both in the general disposition of the two Parts and in the details of the exposition, yet without prejudice to the book's fitness as a manual

for students who have not received any express psychological training. "Figures of Speech," which are specially illustrative of psychological principles, are now treated at more than twice their former length, and placed in the heart of the work, their former place at the beginning being now taken by the more fundamental topics, previously scattered about, of "Order and Number of Words," "Sentence," and "Paragraph". This is a distinct improvement. The remainder of pt. i., from p. 233, is taken up with a more developed treatment than formerly of the "Intellectual Qualities of Style," followed from p. 278 by study of a large number of "Promiscuous Examples". The Intellectual Qualities are now distinguished as "Clearness," "Simplicity," "Impressiveness" and "Picturesqueness," the last-named already involving an admixture of the Emotional. The other notable change thus far is the suppression of "Kinds of Composition" (Description, &c.) as an express topic; what was formerly set out (at considerable length) under this head being now given, or to be given, otherwise in the course of the re-arranged and developed exposition. "Poetry," the final topic of the old *Rhetoric*, is now, as regards its "definition," made the subject of a special discussion (pp. 207-56) at the end of the supplementary or "overflow" volume, in which the author sets forth (controversially) his general views as to the right mode of teaching English (pp. 1-47), and then works out a series of "Select Lessons on the leading Qualities of Style". As a study in the art of Definition, as well as for its material import, this chapter on Poetry is to be noted.

The Science of Thought. By F. Max Müller. London: Longmans, Green & Co., 1887. Pp. xxiv., 664.

This book has come to hand just not too late for mention in the present No. Its main contents will be found set out in an advertisement on the wrapper. The author, in his preface, appears to think that the day is past —for a time at least—when such high philosophy as he and, we may suppose also, his friend Noiré (to whom the book is dedicated) have it still in them to enlighten the world withal, has a chance of being listened to. He need be under no such apprehension. The time never was when topics like those of which he treats would have interested half as many people as will turn with eagerness now to anything new and important that he has to say about them; and he surely underrates his own (better say nothing of Noiré's) power of attractive exposition. The fear indeed should be not that he will not have plenty of interested and admiring readers, but that the better-trained sort may not find his piquant observations on philosophical thinkers and philosophical questions quite deep-going and close enough. However, he has always his treasure-house of linguistic facts out of which to draw things both new and old that are of the first significance for a true appreciation of the nature of human reason; and, making it his chief business in this work—of which the motto is "No Reason without Language, no Language without Reason"—so to draw, he shall obtain in these pages, as soon as circumstances permit, the patient and open-minded consideration that is due to this outcome of a life of long and strenuous intellectual labour. He says "possibly" its final outcome; but we will rather hope that he may still be able to produce not only the other book—supplementary to the present one—which he says he has long prepared on "Mythology" as work of self-consciousness, but also his crowning piece in which he would "show that the same road which led mankind into the wilderness of Mythology, in the widest sense of the word, may lead us back to a point from which we recognise in all self-conscious Mona the Great Self, conscious of all Mona".

Vocabulary of Philosophy, Psychological, Ethical, Metaphysical: With Quotations and References. By WILLIAM FLEMING, D.D., formerly Professor of Moral Philosophy in the University of Glasgow. Fourth Edition. Revised and largely reconstructed by HENRY CALDERWOOD, LL.D., Professor of Moral Philosophy, University of Edinburgh. London: C. Griffin & Co., 1887. Pp. vii., 439.

Blots that disfigured the earlier editions of this *Vocabulary*, and that were left standing even in the third when it had come under the charge of the present editor, have now been removed, and so many alterations and additions have been made—with the help mainly of Prof. James Seth, but also of Messrs. J. Weir and W. Mitchell—that the old-fashioned work may fairly be said to appear in "largely reconstructed" form. One could wish only that the reconstruction had been still more thorough. Of *Fleming* there remains a good deal to be yet thrown away,—if also something to be restored, as, *e.g.*, the old initial topic "Abduction" (Aristotle's *ἀπαγωγή*, not at all accounted for afterwards by a mere mention of 'Apagogical'), now left out when 'Adscititious' (Clarke) or "Autocrasy" (South) might well have been spared instead by the inquiring student. The use, in fact, now left for *Fleming* could be little else than to serve as a reminder of certain words of the more unfamiliar sort, or as a repository from which some quotations might be handily culled. Even when he had swept up a number of good quotations, in the case of words with an important historical development, the Glasgow professor had a way of disposing them with such perfect inconsequence that his example was there only to be shunned. It is a pleasure to acknowledge that in the present edition a manifest effort has been made towards improvement and reform in this matter of orderly treatment; still it is only partially successful—by reason of sheer intractability in the matter taken over: compare, *e.g.*, the article 'Cause'. And if Fleming's original quotations needed a more careful sifting and ordering, it was surely time that all his second-hand ones should be dropt: there are some very odd survivals in this kind. Of the new matter, much is open to criticism. Thus, 'Averages' is made the occasion for giving some vague references or citations about probability and chance, hardly at all relevant to the topic; where a good distinction of Average and Mean would have been really useful to the student. Neither there, nor afterwards when 'Chance' is treated in its place, is any mention made of Mr. Venn's well-known work—a serious omission when elsewhere there is so evident an intention of referring the student to good and accessible sources of information on the different topics. Under 'Connotation,' is it right to say that "according to Mill the only non-connotative terms are *proper* names," or, later under 'Term,' to lay down without qualification that "*abstract* terms are connotative only"? The same topic suggests also another remark: 'Connotation' might well have given occasion for some historical note of Mill's diversion of the word from its Scholastic usage; but indeed it is one of the most obvious deficiencies of the *Vocabulary* in any form it has yet received, that little or no attempt is made to trace the history—often so interesting and important—of the various words. When historical indications are given, they are not always as exact as they should be. Thus it is surely not "recently"—*i.e.*, only by Mr. Sully—that "the term *connate* has been employed in preference to the older term *innate*," when Shaftesbury and others made so great a point of it long ago. But enough of this: the work might have been much more adequately and circumspectly done, and yet leave many openings for critical emendation. Even in the past, the *Vocabulary* must have been found somehow useful, or at least attractive, before it could obtain a sale of three editions; and of the

present one it may be safely said that it is much the best yet issued. Not less safe is the prophecy that the next will be a good deal better.

The Philosophy of Law. An Exposition of the Fundamental Principles of Jurisprudence as the Science of Right. By IMMANUEL KANT. Translated from the German by W. HASTIE, B.D. Edinburgh: T. & T. Clark, 1887. Pp. xxxvi., 265.

This translation of Kant's *Rechtslehre* has been undertaken by Mr. Hastie in the conviction that, as in philosophy generally, so in the philosophy of law no advance can be made except as the result of a previous "return to Kant". The Preface and Introduction, as he mentions, have already been translated (by J. W. Semple), but they are now, with the rest of the book which appears in English for the first time, translated anew.

The Christian Platonists of Alexandria. Eight Lectures preached before the University of Oxford in the Year 1886 on the Foundation of the late Rev. John Bampton, M.A., Canon of Salisbury. By CHARLES BIGG, D.D., Assistant Chaplain of Corpus Christi College, formerly Senior Student of Christ Church, Oxford. Oxford: Clarendon Press, 1886. Pp. xxvii., 304.

These "Bampton Lectures" are rather a contribution to the history of philosophical theology than to the history of philosophy directly; but incidentally they contain abundance of philosophical interest. They are founded both on study of the Alexandrians themselves and on full knowledge of the work of English and foreign scholars. In his very copious notes the author shows himself especially anxious to give reasons for his acceptance or rejection of the opinions of German historians and critics on disputed points of interpretation of texts and filiation of doctrines. The treatment is throughout in an impartial spirit. The titles of the Lectures are—(i.) "Introduction. Philo and the Gnostics," (ii., iii.) "Clement," (iv.-vi.) "Origen," (vii.) "The Reformed Paganism," (viii.) "Summary".

The Historical Basis of Modern Europe (1760-1815). An Introductory Study to the General History of Europe in the 19th Century. By ARCHIBALD WEIR, M.A. London: Swan, Sonnenschein, Lowrey & Co., 1886. Pp. xx., 616.

One chapter of this work (c. xii. "Critical Philosophy and Sensational Psychology," pp. 471-505) is expressly devoted to the philosophical development of modern Europe. Starting with Locke on one side, and Descartes on the other, the writer gives a sketch of the stages of British and Continental thought, down to the Kantian philosophy, the Common Sense School, and "the Metaphysics of Association". The present sketch is partly derived from his *Introduction to the Critical Philosophy of Kant* (noticed in MIND vi. 596).

Psychology. By JOHN DEWEY, Ph.D., Assistant Professor of Philosophy in Michigan University. New York: Harper & Brothers, 1887. Pp 427.

This is a treatise on psychology written for class-room instruction, with full sense, as might be expected from the author, of the difficulties and obligations to be faced at the present time by any expositor of the science, owing to its peculiar relations with philosophy. Difficulties and obligations alike have from different points of view been so much insisted upon in the pages of MIND of late years, that some detailed Critical Notice of

the author's effort is due. For the present it is only noted that, after an Introduction dealing in two chapters with the "Nature and Method of Psychology" and "Mind and Modes of Activity," the division is into "Knowledge" (pp. 27-245), "Feeling" (pp. 246-346), "The Will" (pp. 347-416),—a fair and equitable disposition of the available space; and that Knowledge is treated under the three main rubrics of "Elements" (giving the exposition of Sensation), "Processes" (including Apperception, Association, Dissociation, Attention, Retention), "Stages" (Perception, Memory, Imagination, Thinking, Intuition). Experts may already form some judgment on the book from so much indication of its scheme.

La Vie et la Pensée. Éléments réels de la Philosophie. Par Émile Burnouf, Directeur Honoraire de l'École d'Athènes. Paris: C. Reinwald, 1886. Pp. viii., 452.

The eminent Orientalist has here written a book of rare and curious philosophical interest, upon which his studies in eastern lore have not been without influence. It is written in the interest of a revival of metaphysical philosophy as against mere psychologising, yet of a philosophy that not only takes account of the results of psychology but starts explicitly from a basis of natural science. An understanding of Thought, in the author's view, is not to be obtained apart from an understanding of Life, and if this already leads beyond physical to properly metaphysical consideration, the science of inorganic as well as organic nature still supplies the only real ground of the whole inquiry. Accordingly a great part of the work is taken up with a somewhat detailed "Picture of Life" upon earth (pp. 69-193), after a first analysis of life has been attained in an introductory dialogue between the author and a newly-buried friend, who is found revisiting the glimpses of the sun one day for a few hours just before his bodily form becomes finally dissolved into its constituent atoms. The dialogue is fanciful enough in its general conception, and is not always consistently carried through, yet is managed on the whole with good dramatic effect, and is made to serve the author's purpose of preliminary exposition both strikingly and well. In the "Picture" that follows, the course of the development of plant and animal life in its varied forms is traced, on the one hand in relation with general cosmical conditions, and on the other with a view to the appearance of man as its highest term (thus far), since it is in connexion with the thinking nature of man that the questions of philosophy take their rise. These are then treated in a second part, "Man, Thought, God," in which passage is made from consideration of the living human organism as it gradually assumes form, through a survey of the conditions and products of human feeling and thought (with death as limit), to a general speculative conclusion on the subject of God and the world. The author comes here to rest in a sort of Spinozistic pantheism, after having dealt, in the body of his work, with the facts of life and thought—or at least the facts of life—in the spirit rather of Leibniz's monadology. Not that there he does not pursue a line of his own, starting from assumptions and passing to conclusions which he opposes to those of Leibniz; yet their main conceptions have an unquestionable affinity, and it is in the author's thorough-going application of the monadic notion that the chief interest of his work lies. Explaining life, at whatever stage, by the organising action of a "central atom" in relation with a group of other atoms of lower degree—action which he finds better expressed by the word "analysis" than evolution, as applicable equally to all that goes on in the phase of thought (from which indeed it is borrowed)—he concerns himself specially with the facts of generation,

and finds in these the clue to the question of an after-life. The central atom, when dissolution of an organised body (that is, distribution of its elements) takes place some time after the change that we denominate death, is there ready to begin anew the work of self-incarnation ; but, just as the (already so far incarnated) sperm-animalcule of a dog, though it found its way to the ovum of a sheep, can work no effect upon it, so the simple "central atom" of any grade, having acquired a certain modification of character in the course of its last life-experience, must be placed in new and suitable circumstances before re-incarnation can go forward. By a series of cosmic "revolutions," of which the author thinks the geological record bears evidence, such new conditions have been provided in the past for the progressive development of living things through all grades up to man ; and the indestructible "central atom" of a man who has lived, after having gone through previous lives of lower degree, besides still earlier development into that condition that first fitted it to become central in a living organism, has now to wait till a new cosmic "revolution" gives it the opportunity of entering upon a somehow higher life. It is here that the influence of eastern ideas is apparent in the author's speculation, but he himself notes how his conception, which he seeks to develop in view of the facts of modern science, varies from the old doctrine of metempsychosis. There is much in his whole theory that is left vague and undetermined, not to say that it involves what seem obvious inconsistencies. Thus, on the one hand, he speaks of the central atom in man as having reached the stage of "thinking atom," and goes far at times towards making a really philosophical analysis of human reason ; yet, on the other hand, he does not hesitate to explain thought, as well as feeling, in man as the resultant of atomic grouping and to speak of it thereupon (however its effects may remain capitalized in the constitution of the central atom) as ending for the individual with the death of the body ; from which point of view, also, he proclaims with the utmost emphasis that Thought is a mere accident in the universe. The inconsistency seems sufficiently marked, and generally, as before suggested, the final view of "God and the World" appears to hang little together with the doctrine of the body of the work. Nobody, however, that takes up the book will easily lay it down before the end is reached. It is a record of genuine search for light on the highest topics of human concern, and is written throughout with great spirit and force.

Les Phénomènes Affectifs et les Lois de leur Apparition. Essai de Psychologie générale. Par Fr. Paulhan. Paris : F. Alcan, 1887. Pp. 163.

This psychological monograph is a perfectly consistent attempt to apply to the phenomena of feeling the doctrine that all consciousness is an unessential accompaniment of certain links in the physiological processes that constitute the life of the nervous system, all of which processes can be reduced to the type of reflex action. The author recognises (p. 13, note) the idealistic objections to this doctrine, but, while reserving the general philosophical question, declares his opinion that these objections can be answered, that ultimately every psychological problem is a problem of physiology, mental states being the signs, physiological processes the thing signified. Man, in his view, is a combination of systems not completely harmonised, "a sort of machine, ill finished or a little out of order, which, receiving impressions from without, dissolves them and synthesises them by combinations of numerous internal wheels, reacting so as to augment in a certain measure the systematisation of the external world along with its own". Consciousness is a sign of the imperfect working of the machine, and "affective phenomena," being less "systematised" than intellectual phenomena, are signs of a more considerable imperfection or "trouble" in

the working. As indicating "incomplete organisation of a tendency," feeling is a defect; though it may at the same time be a sign of advance of organisation in relation to some former state or to some other organism. The two primary conditions of feeling are (1) "inhibition of a tendency," or a check to the completion of some reflex action, (2) multiplicity of accompanying phenomena. Besides these "necessary but insufficient" primary conditions there are certain secondary conditions, *viz.*, "force and persistence of the inhibited impulse, relatively abrupt appearance and relative inco-ordination of the phenomena, tendency to invade the whole of consciousness". These need not all be present at the same time, but if all are absent there is no feeling. According to the distribution of these conditions the feelings are divided into three classes :—i. Passions, Sentiments, Impulsive Affections, Affective Signs, ii. Affective Sensations (or sensations felt as pleasure or pain,—Mr. Spencer's "presentative feelings"), iii. Emotions. In the third class must be placed "pleasures and pains," but in a division by themselves. "Pleasure is the result of an increasing systematisation, pain is the result of a decreasing systematisation." "Passions" are the intensest of persistent states of feeling; "sentiments" being merely the same phenomena reduced to a less degree of intensity. "Emotions" are distinguished by their less persistence and greater abruptness of appearance (the crises of a "passion," for example, are "emotions"), by the great multitude of accompanying phenomena, especially physical phenomena, such as derangement of circulation, &c., and by their "complete absorption of the psychical forces". The "impulsive affections" and "affective signs" of the first class of feelings are more and more faint "affective substitutes," continually approximating to those last and faintest "intellectual substitutes," the psychological characters of which have never been accurately described. The intenser phenomena of the second and third classes fade off into similar vague states. From these approximating vague states, as from a common root, the intellectual and emotional phenomena arise in their distinctive classes, like animals and plants from primitive forms that are neither. The book is divided into three chapters —(1) "General Law of Production of Affective Phenomena," (2) "The Conditions of Production of the different Classes of Affective Phenomena," (3) "The Laws of Production of Compound Affective Phenomena". All these chapters are full of good and ingenious psychological analysis in detail.

Une Visite à la Salpêtrière. Par J. DELBOEUF. Extrait de la *Revue de Belgique*. Bruxelles : C. Muquardt, 1886. Pp. 49.

This extremely interesting account of observations on hypnotic patients at the Salpêtrière, made by M. Delboeuf, in company with MM. Binet and Féré, supplements the work noticed in the last No. of MIND, p. 144. The author has contented himself, he remarks, with relating what he saw, mixing only a few reflections with his narration. All these "reflections" are very valuable suggestions for further inquiry. In particular, M. Delboeuf has been able, by an application of his own studies of sleep and dreams, to get for the first time evidences of memory of experience in the hypnotic state. The condition is that the last act of the hypnotic "dream" shall be the first of waking (p. 41). It is impossible, he says (p. 33), to be too circumspect in judgments on hypnotic phenomena; some of the more mysterious of which—such as the supposed action of the will across space without physical conductor—he suspects may be explained by "coincidences, auto-suggestions, complaisances in observation," or "unconscious divination of what is expected".

Discussioni gnoseologiche e Note critiche di Francesco Bonatelli, Socio corr. del R. Istituto Ven. di Scienze, Lettere ed Arti. Venezia: G. Antonelli, 1885. Pp. 197.

This is a series of hostile criticisms of the doctrine of "the relativity of consciousness" from Protagoras onwards, with special reference to Mr. Herbert Spencer. In opposition to Mr. Spencer's doctrine of relativity the author finally quotes the following sentence from *First Principles*:—"An ever present sense of real existence is the very basis of our intelligence". These words, he says, repeat in a somewhat different form the doctrine of Rosmini that "the idea of *being* ever present is what constitutes intelligence". He leaves it to others to determine how this "higher conception of intelligence" can be reconciled with the doctrine of relativity.

Die Psychologie Mendelssohn's aus den Quellen dargestellt und kritisch beleuchtet. Von Dr. Leopold Goldhammer. Wien: Ch. D. Lippe, 1886. Pp. 76.

This is an exposition followed by a criticism of the psychology of Moses Mendelssohn, whom the author regards as having been, by his mediation between the Leibnizo-Wolffian and the English philosophy, a predecessor of Kant. He takes occasion to point out the importance of Mendelssohn as a writer, as a representative of the "Aufklärungsphilosophie," and as an æsthetic critic.

Grundlagen zu einer Ethik. Von Dr. Richard von Schubert-Soldern, Privatdocenten der Universität Leipzig. Leipzig: Fues (R. Reisland), 1887. Pp. 168.

After criticising (1) the Kantian ethical principle of "internal authority," which is found to be unfruitful because merely formal, (2) the principle of "external authority," which is found not to be an ultimate principle, (3) the doctrine that "insight" is the characteristic of moral action, which is found to presuppose an end not given in mere insight by itself (Introduction, pp. 1-26), the author proceeds to work out some of the preliminaries to an ethical doctrine of his own (pp. 27-168). The result of the whole is that there can be no "absolute" but only a "relative" ethics. Ethical rules bind only those who have an interest in the end to which they point out the means; that is, they depend for their binding force on some pleasure. This pleasure need not be egoistic, but may be the satisfaction felt in the pleasure or welfare of others. "All actions that have their spring in the general welfare, in the general love of humanity, are called, pre-eminently, moral actions." Altruistic presuppose egoistic pleasures. Society rests on a mixture of egoism and altruism; and since each factor for itself would demand the same social order, it is impossible to say how much each has contributed to the actual result. Altruism will constantly increase, but it is doubtful whether it will ever entirely conquer egoism.

Die Philosophie des Heraklit von Ephesus im Lichte der Mysterienidee. Nebst einem Anhang über heraklitische Einflüsse im alttestamentlichen *Kohelet* und besonders im *Buche der Weisheit*, sowie in der ersten christlichen Literatur. Von Dr. Edmund Pfleiderer, Prof. der Philosophie in Tübingen. Berlin: G. Reimer, 1886. Pp. ix., 384.

The author's main thesis is that Heraclitus received the philosophic impulse not from previous philosophy but from religious ideas. In his general view and method, as he points out, he follows Teichmüller, but differs from him in holding that it was principally the native Greek

mysteries, not Oriental religious ideas, by which Heraclitus was influenced. The result is that the system of the Ephesian no longer presents itself as a "gloomily resigned pessimism," but as an "optimism of reason," and may almost be regarded as "the first speculative attempt at what has since been called a theodicy" (p. 31). The exposition of the system in the light of this view is followed by an appendix (pp. 255-352) in which the author seeks to demonstrate an influence of Heraclitus on the books of *Ecclesiastes* and the *Wisdom of Solomon*. In a supplementary note (pp. 365-382) he further contends that this influence is perceptible in the earliest Christian documents, and especially in the fourth gospel.

Geschichte der Christlichen Ethik. Von Dr. W. Gass. Zweiten Bandes erste Abtheilung. Sechzehntes und siebzehntes Jahrhundert. Die vorherrschend kirchliche Ethik. Berlin: G. Reimer, 1886. Pp. xvi., 372.

In the absence of the earlier and later parts of this work it is impossible to say what is its character as a whole. The present volume is concerned exclusively with the theological as distinguished from the philosophical ethics of the 16th and 17th centuries. After an introduction on "Humanism and the Reformation" (pp. 1-45), the ethical doctrines of the major and minor figures of the Reformation, the Jesuists and Jansenists, the Mystics and Pietists (Catholic and Protestant), and the smaller religious communities are successively described. There is a brief appendix (pp. 368-372) on the ethical doctrine of the Greek Church.

Versuch einer concreten Logik. (Classification und Organisation der Wissenschaften.) Von Dr. Thomas G. Masaryk, Professor an der Böhmischen Universität in Prag. Wien: C. Konegen, 1887. Pp. xvi., 318.

This is the second (revised and enlarged) edition of a work which was published a year ago in Bohemian. By "concrete logic" the author understands what is ordinarily called "doctrine of method". After an introduction (pp. 1-10), the whole work is divided into four books:—i. "Classification of the Sciences" (pp. 11-39); ii. "The Organisation of the Sciences" (pp. 41-68); iii. "System of the Special Sciences" (pp. 69-246); iv. "Conception of Philosophy (= Metaphysics)" (pp. 249-304). The sciences are grouped into "practical" and "theoretical," and these last again into "abstract" and "concrete". In this division as in the hierarchy of the "abstract sciences" (pp. 71-187), the author follows Comte, differing from him chiefly in claiming for psychology the position of an independent science. Comte's classification is defended (with some concessions) against Mr. Spencer, and Mr. Spencer's classification criticised (pp. 34-38). The author notes a certain "sociological colouring" of his own work, and explains it by the circumstance that sociology is the science in which (together with psychology) his special interests lie. He has devoted much attention to English thinkers, and English influence is evident throughout. Altogether the book is founded on wide study, and in detail is accurate and impartial. The author proposes following it up by a more extensive work.

Religionsphilosophie. Von Gustav Teichmüller, ordentl. Professor der Philosophie an der Universität Dorpat. Breslau: W. Koebner, 1886. Pp. xlvi., 558.

Prof. Teichmüller's object in this work is by a criticism of all possible religions, or "logical chemistry of the religious life," to prepare the way for a new "Christian philosophy". In Part i. of his book ("Foundations,"

pp. 1-110), he arrives at the following classification of religions:—(1) Projective Theology, (2) Pantheistic Religions, (3) Christianity. The remaining two parts (ii. "Projective Religions," pp. 111-354; iii. "The Pantheistic Religions," pp. 355-541) have for their purpose to expound and criticise the forms of religion classified under the first two heads. Of the "projective religions" there are two chief forms—"the religion of fear" and "the religion of sin" or "of law". Pantheism has three chief forms—the religions "of action," "of feeling" and "of thought". The projective religions, attacked by criticism, disappear, and the "transitional form" of Atheism or Positivism passes over into Pantheism. Since the three Pantheistic religions in their turn dissolve under criticism, all that remains for us is either to become "atheists of the second power" or else go on "to the third and last stage of religious culture, to the philosophy of Christianity". In order to set free the religious truth in Christianity from its "Hellenic fetters" of Platonic Idealism, a "new philosophy" is required. "The peculiarity of the new philosophy rests on the distinction of consciousness from the function of cognition" (p. xxii.). Consciousness, like the motion of a body, is capable of all degrees, while objects of cognition, like bodies in motion, remain the same. In consequence of this distinction, philosophy as a mere affair of cognition no longer swallows up the mind in itself, "but as a member in a system of co-ordinates recognises the remaining functions of the mind, also the *Ego*, as independent powers".

Die italienische Philosophie des neunzehnten Jahrhunderts. Von Dr. Karl Werner. Fünfter Band: Die Selbstvermittelung des nationalen Culturgedankens in der neuzeitlichen italienischen Philosophie. Wien: G. P. Faesy, 1886. Pp. xi., 427.

In this, the fifth volume of his work on the Italian philosophy of the 19th century (for the first four volumes, see Mind x. 479; xi. 132, 447), Dr. Werner treats of special or applied philosophy under the heads of (1) "Nature-philosophy and Æsthetics" (pp. 3-200); (2) "Psychology and Pædagogics" (pp. 201-231); (3) "Ethics and Jurisprudence, Doctrine of the State and of Society" (pp. 233-347); (4) "Philosophy of History" (pp. 349-378); (5) "History of Philosophy" (pp. 379-420). The present volume has the merits of its predecessors; but as it is even more exclusively expository, it does not offer occasion for detailed remark. By way of criticism of the doctrines expounded, the author indicates that what is required for the completion of the national thought that the philosophers of Italy have been struggling to express, is the theistic and Catholic idea.

Das Problem der Continuität in Mathematik und Mechanik. Historische und systematische Beiträge von Dr. Ferdinand August Müller, Privatdocent der Philosophie an der Universität Giessen. Marburg: N. G. Elwert, 1886. Pp. iv., 123.

Leibniz's "law of continuity" being, in the author's view, the point of most intimate connexion of the Critical with the Leibnizian philosophy, he has set himself to trace the development of this and the related conceptions in Leibniz and Kant. Leibniz made an advance on Descartes by placing the idea of permanence or substance in action instead of extension; but his idea of substance was taken from the *Ego* regarded as active, and then applied to matter; and, generally, there was in Leibniz a mixture of mathematical with dynamical and of these with psychological conceptions. Kant destroyed for ever the conception of "mental substance," and for the first time separated mathematics from dynamics. The doctrine of the conservation of energy in which "the dynamical unity of nature" is now

expressed grew up, the author seeks to show, on Kantian ground, and is an expression of what is affirmed in Kant's "analogies of experience"—"substance, causality and reciprocity". "The law of the conservation of energy signifies conservation in reciprocal action."

In Sachen des Spiritismus und einer naturwissenschaftlichen Psychologie. Von A. Bastian. Berlin: Nicolaische Verlags-Buchhandlung (R. Stricker), 1886. Pp. xx., 216.

The present work is closely connected in subject with the author's immediately preceding book, noticed in Mind xi. 446. The first part of it is occupied with primitive and later animism, doctrines of transmigration, "convulsionary" religious sects, "occult philosophy," &c., in their relations to modern Theosophy and Spiritualism. From p. 137 onwards the author expounds again with all his accustomed learning and variety of citation his doctrine of Folk-psychology as natural science.

Das Körperliche Gefühl. Ein Beitrag zur Entwickelungsgeschichte des Geistes. Von Dr. Eugen Kröner. Breslau: E. Trewendt, 1887. Pp. viii., 210.

The purpose of this book is to show that, "both phylogenetically and ontogenetically," "emotional tone," *i.e.*, feeling regarded as pleasurable or painful, is not something secondary, but is the primitive basis out of which all other parts of the mental life are successively developed. "Feeling," in this sense, is best called "corporal feeling," because it always expresses directly the promotion or checking of bodily function. By way of distinction, the "true feelings" of the Herbartian school may be called specifically "mental". "Feeling in the special sense," or "emotion," depends on "representations," which, according to the true "genetic" order, occupy an intermediate and not a fundamental position —such as the author finds to be accorded to them, expressly or tacitly, by all former psychologies. He regards it as another defect of all former psychologies—at least of all those he discusses—that, while employing the "descriptive" and the "analytical," they neglect the "genetic" method. The new method and doctrine are to be applied to all psychological problems in the manner suggested by Haeckel's dictum, that the history of the individual is an epitome of the history of the race. The true statement of the psychological problem of perception, for example, is found to be: "How, out of pure feeling (Gefühl), that is to say, the consciousness of well- or ill-being, does there develop itself first an untoned feeling (Empfindung), and, further, a relation of the same to external objects?" The volume is divided into an introductory historical section (pp. 1-27) and two others, of which the first deals with "general bodily feeling" ("Das Gemeingefühl," pp. 28-138), the second with the feeling that accompanies the functioning of the organs of special sense ("Das sinnliche Gefühl," pp. 139-206). Phylogenetically as well as ontogenetically, the second kind of feeling—by which we are to understand, as before, emotional tone, not specific sensations as such—is developed immediately out of the first, and the boundary between them cannot be exactly drawn. In a future volume the author proposes to deal more particularly with "the biological significance of corporal feeling".

Die deutsche Aesthetik seit Kant. Von Eduard von Hartmann. Erster historisch-kritischer Theil der Aesthetik. 5 Lieferungen. Berlin: C. Duncker (C. Heymons), 1886. Pp. xii., 584.

This new work by Von Hartmann appears from the first in the cheap edition of "Selected Works," of which it forms parts 8-12. As is

indicated in the sub-title, it is preliminary to a constructive treatise on Æsthetics. The author's objects are, (1) to trace modern æsthetic theories to their origin in Kant's *Kritik der Urtheilskraft*, and (2) to supplement former histories by accounts of some less-known German writers. In Kant he finds not only the origin of all scientific treatment of æsthetics, but also of each single direction of thought that has been followed up in Germany. Book i. (pp. 1-362) gives an account of the historical development of general æsthetic doctrine according to the author's scheme. Book ii. ("The Development of the most important Special Problems," pp. 363-580) is divided as follows:—I. "The Contrary and the Modifications of the Beautiful," 1. "The Ugly," 2. "The Sublime and its Contrary," 3. "The Comic," 4. "The Tragic," 5. "The Humorous". II. "Disputed Questions," 1. "The Place of Architecture in the System of the Arts," 2. "Idealism and Formalism in the Æsthetics of Music," 3. "The Significance of the Arts of Acting and Dancing," 4. "The Classification of the Arts," 5. "The Combination of the Arts".

Grundriss der Geschichte der Philosophie. Von Karl Christian Friedrich Krause. Aus dem handschriftlichen Nachlasse des Verfassers herausgegeben von Dr. Paul Hohlfeld und Dr. Aug. Wünsche. Leipzig: O. Schulze, 1887. Pp. xiv., 481.

This volume, composed in 1829, but now first published, is not the complete History of Philosophy projected by the author, but forms what was to have been the second part of his whole work. After an introduction (pp. 1-32) it is divided into three "chief Parts," the first (pp. 33-174) treating of ancient, the second (pp. 174-227) of mediæval, the third (pp. 228-478) of modern philosophy. The present volume was to have been preceded by a general theory of history of philosophy and its place among the sciences, and followed by estimates of the philosophers whose systems are expounded. Of these first and third parts only some fragments are in existence; but from the indications given we may infer what would have been the general character of the more extended treatment. Krause is dominated by the idea of human history as an organic whole in which the history of philosophy is included. History of philosophy, as well as general history, has certain stages of development that follow one another according to assignable laws. First there was a "golden age" in which philosophy and all the sciences formed an organic unity of knowledge. From this age a tradition has been handed down to later ages. It has been the problem of metaphysical systems to reconstruct the primitive unity of knowledge, but all have hitherto succumbed to scepticism. The problem itself, however, is not insoluble; and it is only in relation to a system of "absolutist" metaphysics impregnable to scepticism that the systems of the past can be definitively judged. Krause's *Wesenlehre* claims to be such a system. The "pure history of philosophy," which alone has been completed, is, however, to be an impartial exposition of all systems, including the *Wesenlehre* itself.

Die philosophische Weltanschauung der Reformationszeit in ihren Beziehungen zur Gegenwart. Von Moriz Carrière. Zweite vermehrte Auflage. 2 Theile. Leipzig: F. A. Brockhaus, 1887. Pp. xi., 419; vii., 319.

This standard work, which has long been out of print, now appears in a second and enlarged edition. While incorporating the results of later study, the author has avoided the kind of rewriting that would have tended to destroy the original character of the book (first published in 1846). In general arrangement, as well as in the estimates of particular figures, it remains substantially the same. Critical Notice will follow.

Historia Philosophiae Graecae. Testimonia Auctorum conlegerunt Notisque instruxerunt H. RITTER et L. PRELLER. Pars prima septimum edita. Physicorum Doctrinae recognitae a FR. SCHULTESS. Gothae : Sumptibus Fridr. Andr. Perthes, 1886. Pp. viii., 180.

First published in 1838, revised by Preller for a second edition in 1857, and then issued in successive editions without further change till taken in hand by Teichmüller for a sixth in 1878, the collection of Greek (or Latin) extracts, with Latin notes, that has served students of Greek philosophy so well through half a century, here begins, in a seventh edition, to be brought up fully to the level of the latest and best research in the subject. In no department has later inquiry been so active and fruitful as in that of the early "Nature-philosophy," and it is to this that the new editor (known by his Platonic studies) has for the present confined his labours, without giving any definite promise as to the remainder of the work. The part is increased by about half as much matter again as it contained on finally leaving Preller's hands, and otherwise appears in a considerably altered form. Preller's division of Ionics—Pythagoreans—Eleatics and Empedocles, substituted for the original division into supporters of a single mutable principle and supporters of one or more immutable principles, now gives place to a general ordering of the "*Physici*" in chronological succession, with the result that Empedocles is separated from the Eleatics by Anaxagoras, and is now followed by Leucippus and Democritus, with Diogenes, Archelaus and Hippo bringing up the rear. The additions (or substitutions) are made pretty uniformly throughout, and affect the extracts as well as the notes, though of course it is in the latter that the remarkable thoroughness of the editor's work becomes most apparent. Marginal indication of the subjects of paragraphs is a new and very welcome feature.

RECEIVED also :—

G. S. Fullerton, *The Conception of the Infinite*, Philadelphia, J. B. Lippincott & Co., pp. vii., 131.

A. Alexander, *Some Problems of Philosophy*, New York, Charles Scribner's Sons, pp. 170.

A. Spir, *Esquisses de Philosophie Critique*, Paris, F. Alcan, pp. xi., 189.

Ch. Féré, *Sensation et Mouvement*, Paris, F. Alcan, pp. 164.

L. Natanson, *La Circulation des Forces dans les Êtres animés*, Paris, Bureau des deux Revues, pp. 74.

E. Morselli, *La Filosofia Monistica in Italia*, Milano-Torino, Dumolard, pp. 42.

C. Sigwart, *Vorfragen der Ethik*, Freiburg i. B., J. C. B. Mohr (Paul Siebeck), pp. 48.

R. Eucken, *Zur Würdigung Comte's u. des Positivismus*, Jena, pp. 28.

F. V. v. Wasserschleben, *Die drei metaphysischen Fragen nach Kant's Prolegomena*, Berlin, C. Duncker (C. Heymons), pp. vii., 115.

H. Was, *Plato's Symposion, Eene Erotische Studie*, Arnheim, P. Gouda Quint, pp. xi., 103.

NOTICE of some of these will follow.

VIII.—NOTES AND CORRESPONDENCE.

ON MR. WARD'S "PSYCHOLOGICAL PRINCIPLES (III.)".

In Mr. Ward's article on Psychological Principles, in the last number of MIND, he illustrates the imperfections of present Psychology, as regards the use of terms, by a copious reference to my modes of expressing the fundamental conceptions of the science. It will be long ere we attain an unimpeachable phraseology for the highest generalities of the mind, and none of us can be too thankful for the criticism that shows us our weak points. At the same time, it is not in human nature to acknowledge errors wholesale, without an attempt at palliation; and I must endeavour to justify, as far as may be, some at least of the expressions that Mr. Ward refers to.

One thing I am free to admit, namely, that in approaching the subject at the commencement, I use a variety of terms that are not strictly defined, and treat as nearly synonymous words that have a real difference of meaning. In the first statement of notions that are new to the reader, it is scarcely possible to preserve exactness; at all events, there is another condition to be attended to, namely, to be suggestive. It would be well if these two things could be combined—perfect propriety in the use of terms, and the suggestion of meanings requisite to some faint comprehension of the subject-matter. I, for one, however, confess myself unequal to the reconciliation of the two objects. I despair of giving an accurate conception of the fundamental constituents of mind at the outset; I am only too glad if I can give an approximation to begin with, and gradually improve upon the statement, so as to end with just and definite notions of all essential matters. Thus it is, that I take the definition of the wide term Consciousness as the concluding topic of my larger work.

Of course, this is a wholly indefensible position, if the vagueness allowed at the outset is maintained all through. I can, however, show that this is not the case with several of Mr. Ward's instances. He is especially severe upon my use of the word 'Sensation' in the classification of Feelings. He says very truly that I divide Feelings into Pleasurable, Painful and Indifferent, and again into Sensations and Emotions. He asks what is the connexion between these quite distinct classifications. I fail to see the relevancy of the question, inasmuch as any genus may be broken up into species on different lines. The real point of the criticism I take to be, that Sensations are pre-eminently involved with our Intelligence, which would seem to make the classification very absurd. Mr. Ward should have done me the justice to remark how careful I am, from the very beginning, to state the double inclusion under Sensations; not to speak of the whole method of the detailed description, which gives the doubleness an emphasis that can hardly be mistaken. In the Introduction to *The Senses and the Intellect*, this expression occurs:—"Our SENSATIONS, as will be afterwards seen, come partly under Feeling and partly under Thought". Again, in the Introduction to the *Manual*, which contains some instances of the unqualified use of Sensation, there is this corrective —"Sensation, which contains a department of Feeling". It is this department that allows Sensations and Emotions to be coupled as exhausting the region of Feeling. These give the sub-genera of Feeling, while the other division exhibits the final classification of the different species of Sensations and Emotions. Thus, among the Sensations of Hearing (Emotional) are included Pleasures, Pains and states of Neutral excitement.

The criticism that most excites my wonder is found in the following expressions. "Psychologists seem to be aware of no confusion when they talk indifferently of *states* of mind, *contents* of mind, *acts* of mind: treat the same fact now as a process, now as a product." Again, quoting my general analysis of mind, Mr. Ward remarks—"We are told of three properties or functions of mind, as if there were no difference between predicating *property* and *function*". I have already given an apology for using, at the outset, a variety of terms that cannot be defined at that stage. But I can quote Mr. Ward himself, as acknowledging the very same difficulty in his own treatment. This is the introductory sentence on Feeling in his *Encyclopædia Britannica* article:—"We might now proceed to inquire more closely into the character and relations of the three *states*, *modes* or *acts* of this subject". Here he appends the following foot-note. "It is useless at this point attempting to decide on the comparative appropriateness of these and similar terms, such as 'faculties,' 'capacities,' '*functions*,' &c." That is to say, he is aware that he must find access to his readers' minds by the use of whatever terms are familiar to them, and leave precise defining to a later stage. This is exactly my justification. Yet he goes on harping on the same theme, as when he says, "*states*, *actions* and *powers* are certainly not congruent *conceptions*". I should not say they were.

Another alleged fault in my exposition is to misuse the ambiguous term 'Consciousness'. It seems to me that this is about the least ambiguous word in Psychology: its width of comprehension is a safeguard against its abuse. But Mr. Ward makes out a fallacy of division in calling a sensation a conscious state. For the life of me, I can see no harm in this; nor would I venture to say that a sensation is *not* a conscious state, not a mode of consciousness at all. I may be the victim of self-conceit, but I fancy I can always keep myself straight with the word 'consciousness'; it is *self*-consciousness that floors me, and I am generally on my guard against using the combination. The difficulty, however, lies with 'self,' and not with consciousness.

The sort of error that I am charged with, in the handling of consciousness, is the confounding the powers of the Intelligence, as Discrimination and Assimilation, with the materials discriminated and assimilated. Of course the sensation of blue is a conscious state; the act of distinguishing blue from violet is also a conscious state, but they are not both in the same category; and if, like Mr. Ward, I huddle, at the outset, states, modes and acts, I trust to the detailed exemplification of Sense on the one hand, and of Intellect on the other, to correct all essential errors of confusion of the kind attributed to me.

The difficulties in connexion with Consciousness are, to my mind, greatly surpassed by those that beset Feeling. Mr. Ward, in his article in the *Encyc. Brit.*, deserves the highest credit for his endeavour to clear up this word; and I freely allow that he has achieved considerable success. At the same time, it takes no small effort to follow his nice distinctions; and he cannot help being aware that a feeling very readily passes into a thing of intellect—namely, by being subject to identification and discrimination. These powers deserve to be named as distinct facts; but without the feelings to be operated upon they are non-existent. Nay more, both the change accompanying discrimination, and the resuscitation of agreement, besides their intellectual result, give a more or less considerable shock of consciousness, which I cannot rank with either Intellect or Will, and therefore it must be under Feeling or nowhere.

If instead of culling a number of phrases out of their context, Mr. Ward had followed the preliminary sketch of the fundamentals of the

mind at the opening of the *Senses and Intellect*, he could have marked exactly the points where I went out of the right path, in separating Feeling, Volition and Intellect. He would have seen that I was seriously oppressed with the difficulty of assigning the relationship of Feeling and Intellect, and, at all events, gave a perfectly unambiguous statement of that relationship in the following sentences :—

"In proportion as a mental experience contains the facts named discrimination, comparison and retentiveness, it is an Intellectual experience ; and in proportion as it is wanting in these, and shows itself in pleasure or pain, it is of the nature of Feeling. The very same state of mind may have both an intellectual side and an emotional side ; indeed, this is a usual occurrence. And, like many things that are radically contrasted, as day and night, these two distinct facts of our nature pass into one another by a gradual transition, so that an absolute line of separation is not always possible—a circumstance that does not invalidate the genuineness of their mutual contrast."

I can scarcely undertake to improve upon the clearness of this statement ; and if Mr. Ward had inserted his critical knife at the defective transitions, I should have been greatly obliged to him.

Mr. Ward's remarks upon the misuse of Feeling in connexion with the germ of the Will, I cannot detach sufficiently from the doctrine itself, to say how far his cavil is well or ill-founded. My belief is that none of those mistakes that he dwells upon are really involved in the exposition. The whole subject has its difficulties, which will remain after the phraseology is amended to Mr. Ward's heart's content. I should prefer being challenged upon the substance and meaning of the general doctrine of Will ; and will remain for the present under the accusation of having used improper and confusing language in relation to it. I shall of course take care, in any re-statement, to benefit by the criticisms now passed upon the wording of the illustration.

A few words now upon the proposed use of Attention. 'Granting that the meaning intended to be expressed has all the importance attributed to it, we must yet be aware of what is involved in inducing a hundred millions of people to surrender the negative word 'inattention' when the situation occurs wherein it is at present employed. The name 'temperature' saves us from the awkwardness of employing 'heat' for all degrees down to the bottom of the scale. It was some attempt of this nature, to use heat in connexion with snow, that drew out the Irishman's question—'How many snow-balls will it take to boil a kettle?' So, a word corresponding to Temperature for Heat and Cold, or to Magnitude for Large and Small, has to be adopted or invented, as the only way to avoid a hopeless collision with popular usage. We may of course have one meaning in general circulation, and another in the schools of Psychology. Such diversities are frequently unavoidable ; but there is a peculiar aggravation in the conflict of usage in this instance, and the sooner we get out of it the better.

Mr. Ward repeatedly emphasises the want of coincidence between Attention, even in his enlarged view, and Consciousness. I should like, for my own satisfaction, that he would attempt a *positive* definition of the part or parts of consciousness excluded from Attention. "Attention," he says, "will cover part of what is meant by consciousness,—so much of it, that is, as answers to being mentally active, active enough at least to *receive* impressions." Now this negative definition should be supplemented by something positive. At least, we might have a few exemplary or representative particulars, to give us a faint notion of the kind of consciousness that lies outside Attention.

A. Bain.

ON A FEATURE OF ACTIVE ATTENTION.

I should like, in consequence of Mr. Ward's article (MIND No. 45), to be allowed a few words on an essential point. To Mr. Ward's objections in general I cannot reply, because the only answer I could make would be to confess that I have failed entirely and throughout to convey to him my meaning. I am sorry for this, because otherwise I should have valued his criticism. All I wish to do here is to attempt to clear up one point as to active attention—namely, the manner in which it may intensify sensations. The account which I adopted (MIND No. 43) was that the result is caused by a transfer of strength from an idea through blending.

If we take for example a composite smell, one of its elements may engross me directly by its strength. Again, resolving to observe and bringing the idea of one element, I may find the answering component in sensation strengthened. Or again, that component may excite ideas, its own forming the centre, and upon this we may find the sensation grow stronger. In all these cases I think the idea blends itself with the sensation, so adding strength thereto. No doubt much happens besides, but I think thus much to be essential, and I tried (as I believed) to say so (MIND No. 43, pp. 310-312).

Nor need anyone who holds that the working idea interests through pleasure be, I think, at a loss. If he should be so misled as to doubt that there are ideas of pleasure, he need not therefore cease to believe that ideas may be pleasant. Nor need he doubt that an idea, like every other psychical event, has a force which is not the same as its pleasantness. He will say, I think, that the influence of this pleasure on the sensation is another and a further question, but that here the essential point to his mind is a transfer of strength as distinct from pleasantness. But, for myself, I do *not* hold that interest must consist in pleasure, and I really did my best, though it would seem not successfully, to say so. (*Ibid.*, p. 310. Cp. 315, and 306, note.) I ought indeed to have mentioned, when, for argument's sake, I treated the interest of ideas as their pleasantness, that I did not intend that to hold good, for argument's sake, of sensations also. This, in fact, did not occur to me, and so I omitted to issue any warning to the reader.

I will only add my regret that my paper should have appeared to be a criticism on Mr. Ward individually. Nothing in it referred to him, and when the MS. left my hands I do not think that I had read one word of his writing. I have had that pleasure since, and can assure Mr. Ward that, though I think the view of Attention which he has adopted is quite inadmissible, this is far from blinding me to the solid value of his work in general.

F. H. BRADLEY.

"ILLUSORY PSYCHOLOGY."—A REJOINDER.

Perhaps I may be allowed a few words of rejoinder to Prof. Dewey's reply on this subject in MIND No. 45. I would not ask it, since plainly controversy must end somewhere, did not Prof. Dewey allege, as his reason for making no attempt to deal specifically with my objections, that I have mistaken the bearing of both his articles so completely as to render my objections irrelevant. This allegation cannot be allowed to pass unchallenged. It is entirely erroneous. I made no mistake of the kind. I did not suppose "that it was the object of one [the art. in MIND No. 41] to explain the nature of the individual and the universal consciousness, and of the other [that in MIND No. 42] to give some definite directions regarding

the application of the method to philosophy and psychology" (p. 83). If I had imagined this, I should never have taken pen in hand to reply to them. My conception of their purpose was almost identical with Prof. Dewey's present description of it (p. 88): "The article in MIND No. 41 was written to show that psychology could not be even psychology, much less philosophy, until the universal factor in consciousness was attended to. . . . The article in MIND No. 42 was written to show that transcendentalism was incomplete till it recognised that the universal content can be realised only in an individual bearer."

It was precisely against Prof. Dewey's attempt to show these things that I argued; and of course in doing so I followed his articles as closely as I could, in order to bring out what seemed to me the writer's misconception, not of English Psychology only, but also of German Transcendentalism. Had I stated what I conceived his general purpose to be, and argued against the misconceptions I supposed it to contain, it might have been plausibly, though at the same time quite sincerely, replied, that I had set up a figure of straw to contend with.

But now we see, on Prof. Dewey's own showing, what it was that he was aiming at. It was an alliance, or perhaps we may say an union, between English Psychological Philosophy and German Transcendentalism, in which the first was to supply the method, and the second "the universal factor"—whatever that may mean. No doubt some very striking philosophy was anticipated as the result. Now this idea appeared to me to involve a radical misconception of the nature of both the suggested allies; but to show this by examining what I might suppose to be Prof. Dewey's idea of their nature was not my business: it was enough for me to point out the misconceptions, confusions and self-contradictions involved throughout his pleading in favour of the alliance. I considered that, if the misconceptions were really there, they would inevitably show themselves in the pleading. I also thought that, in recommending Transcendentalism, he could hardly avoid making some of the assumptions commonly made by that which he recommended. This proved to be the case. But it was with the assumptions as made by the advocate, not as appearing in the system advocated, that I was primarily concerned.

I will now state what I suppose the chief of these misconceptions to have been, repeating that it was they and the plea founded on them which alone induced me to criticise Prof. Dewey's articles at all. I should not have cared to do so, if my notion of his purpose had been what he supposes. But the idea of an alliance or union between English Psychological Philosophy and German Transcendentalism, on the ground that both were based solely and directly on conscious experience, and the representation of this principle as at once fundamental and common to both, though too much lost sight of in application, especially on the English side, seemed to me too mischievous to sound philosophy to be allowed to pass altogether without comment.

In the first place, then, it is a great misconception to suppose, that English Philosophy when following psychological method is based solely and directly on an appeal to conscious experience. English Philosophy has always aimed at being so based, and this is the very thing which constitutes its characteristic merit. But English Philosophy, following psychological method, or, as Prof. Dewey thinks, "that way of looking at philosophical questions which is specifically English (and which, following the usual custom, I called psychological)," departs from this sound principle precisely at the point when the psychological method is adopted by it. Psychology alone, whether English or not, makes no claim to be founded directly and solely on experience, but on experience and hypothesis

together, the hypothesis of some real agency in the Subject, the ultimate nature of which is sometimes considered as still open to investigation. It is clear that some such hypothesis is necessary for it as a science, just as physical science requires the hypothesis of the reality and real agency of Matter. The English school of philosophy, on the other hand, has ever since the time of Bacon laid claim to be founded on experience alone. If this be so, then it is a serious misconception to represent English philosophy on psychological method as standing simply and solely on conscious experience. English philosophy does so, but English psychological philosophy does not.

The second misconception consists in making the very same supposition with regard to German Transcendentalism, or Transcendentalism simply, if that sounds better, seeing that all Transcendentalism is in point of fact derived from Germany; I mean the supposition that it also is based directly and solely on conscious experience, without aid from assumption or hypothesis. Down to the time of Berkeley philosophers and psychologists alike had, with few exceptions, accepted the existence of an immaterial soul or mind in some form or other, as matter of philosophical, concurrently with theological, tradition. The soul or mind was in those days conceived as a real empirical agent, only that it was not perceptible by the senses. Kant took the step of substituting for it a more shadowy, but still empirical agent, namely, a noumenal and transcendent one, which by hypothesis could not *per se* be even thought as an object of experience at all. This is the origin of what is called Transcendentalism, which is nothing but a doubly refined form of empiricism. I mean that both the soul or mind and its transcendent substitute are objects conceived on the same type as ordinary objects of pre-philosophic common sense; objects not analysed as realities into their constituent elements, but reduced unanalysed to shadows; the latter of which was at the same time placed (so it was hoped) beyond the reach of criticism, by the avowal that its nature was to be non-phenomenal itself, but to have phenomenal manifestations. Singularly enough, it was declared to be unthinkable and yet actually thought of as a real agent by one and the same theory. The Soul had been the animating reality of Man, and the Transcendent Subject was the animating reality of Man and Nature.

Transcendentalism is thus founded on an *a priori* assumption. I do not of course say that this original form of it has been retained to the present day. What I do say is, that the various forms of it at the present day have this as their common origin, and in virtue of it are founded upon an *a priori* assumption, and not upon experience simply. Transcendentalists are not conscious of it as an assumption, and that is the worst of the mischief. For in consequence they think that the form or forms of it which they themselves adopt furnish an *explanation* of the universe. They take their assumption as a vision into the heart of things. Prof. Dewey shows in his Reply that he is very hazy on the nature of assumptions. He says "to make assumptions is simply to see how facts look when some integral factor is omitted" (p. 88). If that is assumption, then what is abstraction? He mistakes abstraction for assumption.

It follows from the above, that neither of Prof. Dewey's two exhortees, psychological philosophy and transcendentalism, is based upon that principle of appealing to experience alone, which Prof. Dewey attributes to them in common. If they are to forgather, it must be on the basis, not of their common *experientialism*, but of their common *empiricism*. Not that such an alliance need be deprecated, provided its true principle be acknowledged, and its true nature understood. If Prof. Dewey had said that English Psychological Philosophy and German Transcendentalism were alike in

basing themselves on certain common or similar assumptions, instead of saying that they were alike in basing themselves on experience alone, the statement would have been unobjectionable. An alliance on this basis might have been mutually advantageous, had it been practicable. One at least of the proposed allies was in considerable need of aid. English psychological philosophy received a deadly blow from cc. 11 and 12 of J. S. Mill's *Examination of Hamilton's Philosophy*, the chapters entitled respectively "The Psychological Theory of the Belief in an External World" and "The Psychological Theory of the Belief in Matter, how far applicable to Mind," wherein the great empiricist frankly and honestly admitted that he found himself in presence of "the final inexplicability". This was in fact an admission that the psychological theory had broken down in philosophy, as a theory seeking to give a final explication of all things by referring them to other things, after the fashion of science, might have been expected to do.

Now Prof. Dewey thinks, that the psychological theory can be restored to philosophical efficiency, if only it borrows from Transcendentalism the principle of identifying the individual with the universal consciousness, by "viewing" the former "in its finality" (MIND No. 41, p. 18). Unfortunately an individual consciousness "viewed in its finality" is not a reality capable of having experience, is not a real Subject at all, but merely a philosopher's idealisation of one. To identify the individual with the universal consciousness is to assume that all individuals are omniscient. Few Englishmen will find it easy to make this assumption.

In reality it is English Philosophy that is attacked by being identified in principle with English Psychological Philosophy, when the latter is simultaneously identified in principle with German Transcendentalism. For the double identification not only robs English Philosophy of that which is its special attribute, its foundation in experience alone, but transfers that attribute to its ancient antagonist, the *a priori* school of thought, in the person of its modern offspring Transcendentalism. There was a charming audacity about the transference, which, while it charmed, incited to a reply. If the proposed allies forgather, I thought, they shall at least not make off with their ill-gotten booty undetected.

It is doubtless in a very large measure to the natural re-action against J. S. Mill's empiricism, whether held to have broken down or not, that the recent recourse to Transcendentalism on the part of many students of philosophy in this country is owing. They did not, however, like Prof. Dewey, dream of an alliance, but took refuge in what they thought was the antagonistic principle. They saw that to appeal to empirical experience was not to appeal to experience simply; but that Transcendentalism also was at bottom an appeal to empirical experience, this they saw not. In reality the *other* of empirical experience, its explanation, or translation into philosophic thought, is not obtained by transcending it, but by analysing it. Now analysis is the work of experience simply.

Barring the writings of Salomon Maimon, a younger contemporary of Kant's, to which I have drawn attention elsewhere, my own is the only attempt, so far as I know, to base philosophy directly and solely upon experience, distinguished from empiricism, and without admitting assumptions; unless, indeed, John Grote's admirable *Exploratio Philosophica*, published in 1865, the same year as my *Time and Space*, may count as the preliminary of one. The term *philosophy* I take of course in its widest and fullest sense, in which it means the endeavour to make the Universe intelligible to human thought; not to assign its first cause, or real condition, as if it was a particular finite object, but to give a *rationale* of it, always from a human point of view, a point of view from which, not the

Unseen itself, but man's relation to it, is the last object seen, the object which occupies and limits his horizon. That I take to be what philosophy in all ages has aimed at, to understand, not to construct, the Universe, as if human logic contained the secret of its construction, or human dictionaries the Ineffable Name.

The present position of philosophy is not only a scandal to the intellectual world; it is also fraught with danger to the best interests of humanity. Until it is reconstituted, there can be no unity directing human effort: one man will be a Positivist, another a Transcendentalist, another a Materialist, and so on; while all such speculative divergences necessarily involve corresponding divergences in the practical direction of conduct. It has seemed to me that nothing else but experience, experience simply and solely, can be the basis of the required all-embracing unity, dominating but not excluding minor individual differences. And as it happens, this very recourse to experience alone as the basis of true knowledge has been the guiding idea and characteristic mark of English Philosophy, long before Transcendentalism was brought to the birth.

I pass over Prof. Dewey's counter criticism of myself, not from any want of respect for my skilful critic, but because it would far exceed my allotted limits to put the incidental statements of opinion, which my article contains, in their proper setting. If this could be done, I think I discern several points on which we should find ourselves in substantial agreement. I am far from wishing to exaggerate our differences, and on these questions have no reluctance to leave the last word with Prof. Dewey.

SHADWORTH H. HODGSON.

The following from Prof. W. James has just come :—

"Professor Stumpf writes to me that in the quotation I made from him in the last No. of MIND, p. 27, n., I mistranslated his words *Stelle* and *Ort* by *position*, which is properly the equivalent of *Lage* or of *Stellung*, and connotes relation to some other position, as *Ort* and *Stelle* do not. I am sorry that I failed to catch a shading of his meaning which was manifestly essential. I confess, however, that I find a difficulty in thinking of *Ort* as disconnected with *Lage*, of *place* as not implying *position*, of *locus* as independent of *situs*. Prof. Stumpf develops his view in a passage which I would gladly place before the readers of MIND if room could be found for it in the April No.; but it does not induce me to modify my own text." [Extract perforce omitted.—EDITOR.]

Lord Gifford, one of the Scottish Judges, recently deceased, has willed £80,000, in various proportions, to the four Scottish Universities, to be devoted to the foundation of Lectureships in Natural Theology. The terms of the bequest are sufficiently remarkable, as some extracts from the trust-deed will show. In the preamble he says: "I give my body to the earth as it was before, in order that the enduring blocks and materials thereof may be employed in new combinations; and I give my soul to God, in whom and with whom it always was, to be in Him and with Him for ever in closer and more conscious union". Out of his estate he considers himself bound to employ a certain residue for "the good of his fellowmen," and therefore desires the Lectureships to be founded "for promoting, advancing, teaching and diffusing the study of Natural Theology, in the widest sense of the term; in other words, the knowledge of God, the Infinite, the All, the First and Only Cause, the One and the Sole Substance, the Sole Being, the Sole Reality, and the Sole Existence, the knowledge of His nature and attributes, the knowledge of the relations which

men and the whole universe bear to Him, the knowledge of the nature and foundation of ethics or morals, and of all obligations and duties thence arising"; having long "been deeply and firmly convinced" that such knowledge, "when really felt and acted on, is the means of man's highest well-being and the security of his upward progress". The lecturers are to be paid out of the annual proceeds of the funds, and to be appointed for two years only, but "the same lecturer may be reappointed for other two periods of two years each, provided that no one person shall hold the office of lecturer in the same city for more than six years in all, it being desirable that the subjects be promoted and illustrated by different minds". Then follow these notable provisions :—"Fourth, the lecturers appointed shall be subjected to no test of any kind, and shall not be required to take any oath, or to emit or subscribe any declaration of belief, or to make any promise of any kind; they may be of any denomination whatever, or of no denomination at all (and many earnest and high-minded men prefer to belong to no ecclesiastical denomination); they may be of any religion or way of thinking, or, as is sometimes said, they may be of no religion, or they may be so-called sceptics or agnostics or free-thinkers, provided only that the 'patrons' will use diligence to secure that they be able, reverent men, true thinkers, sincere lovers of and earnest inquirers after truth. Fifth, I wish the lecturers to treat their subject as a strictly natural science, the greatest of all possible sciences—indeed, in one sense, the only science, that of Infinite Being—without reference to or reliance upon any supposed special exceptional or so-called miraculous revelation. I wish it considered just as astronomy or chemistry is. I have intentionally indicated, in describing the subject of the lectures, the general aspect which personally I would expect the lectures to bear, but the lecturers shall be under no restraint whatever in their treatment of their theme; for example, they may freely discuss (and it may be well to do so) all questions about man's conceptions of God or the Infinite, their origin, nature and truth, whether he can have any such conceptions, whether God is under any or what limitations, and so on, as I am persuaded that nothing but good can result from free discussion." It will be interesting to watch the fortunes and the outcome of the large-hearted man's foundations.

The Aristotelian Society for the Systematic Study of Philosophy. (22 Albemarle Street, W.).—The papers read since last record have been the following: In 1886—Dec. 6, "Neo-Kantianism in relation to Science," by Mr. G. J. Romanes, F.R.S.; and Dec. 20, "Malebranche," by Mr. H. W. Carr, Hon. Sec. In 1887—Jan. 10, "The Ancient Distinction of Logic, Physic and Ethic," by the Rev. A. Chandler; Jan. 24, "The Theory of Motion," by the Rev. E. P. Scrymgour, V.P.; Feb. 7, "The Monadology of Leibniz," by Miss M. S. Handley; and Feb. 21, "Recent Psychophysical Researches," by Dr. J. M. Cattell. The papers in every instance were followed by a discussion.

Revue Philosophique. — An. xii., No. 1. R. Garofalo—Le délit naturel. V. Brochard—La méthode expérimentale chez les anciens. G. Sorel—Le calcul des probabilités et l'expérience. Observations et Documents (A. Binet—Note sur l'écriture hystérique. H. Neiglick—De la méthode des graduations moyennes pour les sensations lumineuses). Analyses et Comptes-rendus. Correspondance (M. Bernheim—De la suggestion et de ses applications thérapeutiques. M. A. Bertrand—Correspondance inédite de Maine de Biran). Rev. des Périod. Soc. de Psychologie physiolog. (P. Tannery—Sur la parole intérieure. Ch. Richet—De la composition typographique et du style de quelques livres imprimés). No. 2. J. Delboeuf—De la prétendue veille somatique (i.). L. Bianchi et

G. v. Sommer—La polarisation psychique dans la phase somnambulique de l'hypnotisme. F. Bouillier—Ce que deviennent les idées. Ch. Richet—Objet de la psychologie générale. Analyses, &c. (Scotus Novanticus, *Metaphysica nova et vetusta*; J. Sully, *The Teacher's Handbook of Psychology*, &c.). Rev. des Périod. Soc. de Psych. phys. (Lauret et Duchaussoy—Sur un cas héréditaire d'audition colorée). No. 3. R. Garofalo—L'anomalie du criminel. J. Delboeuf—De la prétendue veille, &c. (fin). A. Calinon—Le temps et la force. Analyses, &c. (H. Maudsley, *Natural Causes and Supernatural Seemings*, &c.). Soc. de Psych. phys. (H. Beaunis—Une expérience sur le sens musculaire. A. de Rochas—Hypnotisme et changement de personnalité. C. Sauvaire—Hyperesthésie des sens dans l'état hypnotique).

La Critique Philosophique (Nouv. Sér.).—An. ii., No. 12. Z.—Les hypothèses cosmogoniques. A. Sabatier—Le christianisme et la doctrine de l'évolution (i.). F. Pillon—Un sermon sur le théisme chretien. . . . Notices bibliog. An. iii., No. 1 . . . A. Sabatier—Le christianisme, &c. (fin). C. Renouvier—Réponse à M. A. Sabatier (i.). F. Pillon—Le mysticisme apocalyptique au moyen âge. Notices bibliog. No. 2. C. Renouvier—Réponse, &c. (ii.). G. Lechalas—L'activité de la matière. . . .

Rivista Italiana di Filosofia.—Vol. ii., Disp. 1. R. Mariano—La storia della Chiesa, sua natura, suoi rapporti e suo metodo. N. Fornelli—Il nostro ideale nell' educazione. G. Jandelli—Un libro sulla psicologia del fanciullo. Bibliografie, &c. Disp. 2. C. Ricco—Il peccato. N. Fornelli—Il fondamento morale della pedagogia secondo Herbart, &c. R. Pasquinelli—La dottrina di Socrate nella sua relazione alla morale ed alla politica. F. Masci—Una riposta al prof. Ardigò. Bibliografie, &c.

Rivista di Filosofia Scientifica.—Vol v., No. 11. D. Levi—Gli *Eroici Furori* di G. Bruno: studio critico. R. Acanfora-Venturelli—Sul principio d' identità. G. Cesca—La relatività della conoscenza (ii.). B. Bruno—Appunti sul concetto di causalità: La relazione tra cause ed effetti. Riv. Anal. Riv. Bibliog., &c. No. 12. E. Dal Pozzo di Mombello — L'evoluzione dall' inorganico all' organico. U. Rabbeno — La funzione economica nella vita politica. G. Cattaneo—L'origine dei sessi. Riv. Bib., &c.

Philosophische Monatshefte.—Bd. xxiii., Heft 3, 4. J. Bergmann—Spinoza. Recensionen u. Anzeigen. Litteraturbericht. Bibliographie.

Zeitschrift für Völkerpsychologie u. Sprachwissenschaft.—Bd. xvii., Heft 1. J. Happel—Ueber die Bedeutung der völkerpsychologischen Arbeiten Adolf Bastians. Th. Achelis—Der wissenschaftliche charakter der Ethnologie. Dr. Guggenheim—Zur Geschichte des Inductionsbegriffs. Beurteilungen. H. Steinthal—Bemerkungen zu "Der wiss. Charakter der Ethnologie".

Vierteljahrsschrift für wiss. Philosophie.—Bd. xi., Heft 1. J. v. Kries—Ueber Unterscheidungszeiten. Schmitz-Dumont—Stambegriffe (Kategorien) u. Hauptbegriffe des Denkens. B. Kerry—Ueber Anschauung u. ihre psychische Verarbeitung (iii.). Anzeigen (H. Sidgwick, *Outlines of the History of Ethics*, &c.). Selbstanzeige, &c.

Philosophische Studien.—Bd. iv., Heft 1. W. Wundt—Ueber Ziele u. Wege der Völkerpsychologie. H. Neiglick—Zur Psychophysik des Lichtsinnes. W. Wundt—Bemerkungen zu vorstehendem Aufsatze. J. Merkel—Das psychophysische Grundgesetz in Bezug auf Schallstärken (i.).

Errátum.—In Mr. Ward's article in Mind No. 45, p. 47, last line of text, *for* work *read* force.

No. 47.] [JULY, 1887.

MIND

A QUARTERLY REVIEW

OF

PSYCHOLOGY AND PHILOSOPHY.

I.—THE PERCEPTION OF SPACE. (III.)[1]

By Professor WILLIAM JAMES.

4. *Visual Space.*

IT is when we come to analyse minutely the conditions of *visual* perception that difficulties arise which have made psychologists appeal to new and *quasi*-mythical mental powers. But I firmly believe that even here exact investigation will yield the same verdict as in the cases studied hitherto. This subject will close our survey of the facts, and if it give the result I foretell, we shall be in the best of positions for a few final pages of critically historical review.

If a common person is asked how he is enabled to see things as they are, he will simply reply—by opening his eyes and looking. This innocent answer has, however, long since been impossible for science. There are various paradoxes and irregularities about *what* we appear to perceive under seemingly identical optical conditions, which immediately raise questions. To say nothing now of the time-honoured conundrums of why we see upright with an inverted retinal picture, and why we do not see double; and to leave aside the whole field of colour-contrasts and

[1] Continued from MIND Nos. 45, 46.

ambiguities, as not directly relevant to the space-problem; it is certain that the same retinal image makes us see quite differently-sized and differently-shaped objects at different times, and it is equally certain that the same ocular movement varies in its perceptive import. It ought to be possible, were the act of perception completely and *simply* intelligible, to assign for every distinct judgment of size, shape and position, a distinct optical modification of some kind as its occasion. And the connexion between the two ought to be so constant that, given the same modification, we should always have the same judgment. But if we study the facts closely we soon find no such constant connexion between either judgment and retinal modification, or judgment and muscular modification, to exist. The judgment seems to result from the combination of retinal, muscular and intellectual factors with each other; and any one of them may occasionally overpower the rest in a way which seems to leave the matter subject to no simple law.

The scientific study of the subject, if we omit Descartes, began with Berkeley, and the particular perception he analysed in his *New Theory of Vision* was that of distance or depth. Starting with the physical assumption that a difference in the distance of a point can make no difference in the nature of its retinal image, since "distance being a line directed endwise to the eye, it projects only one point in the fund of the eye—which point remains invariably the same, whether the distance be longer or shorter," he concluded that distance could not possibly be a visual sensation, but must be an intellectual "suggestion" from "custom" of some non-visual experience. According to Berkeley this experience was tactile. His whole treatment of the subject was excessively vague—no shame to him, as a breaker of fresh ground—but, as it has been adopted and enthusiastically hugged in all its vagueness by nearly the whole line of British psychologists who have succeeded him, it will be well for us to begin our study of vision by refuting his notion that depth cannot possibly be perceived in terms of purely visual feeling.

(*a*) *The Third Dimension.*

Berkeleyans unanimously assume that no retinal sensation can primitively be voluminous; if it be extended at all (which they are barely disposed to admit), it can be extended only in the first two dimensions, not in the third. At starting we have denied this, and adduced facts to show that all sensations are voluminous in three dimensions. It is

impossible to lie on one's back on a hill, to let the empty abyss of blue fill one's whole visual field, and to sink deeper and deeper into the merely sensational mode of consciousness regarding it, without feeling that an indeterminate, palpitating, circling depth is as indefeasibly one of its attributes as its breadth. We may artificially exaggerate this sensation of depth. Rise and look from the hill-top at the distant view; represent to yourself as vividly as possible the distance of the uttermost horizon; and then *with inverted head* look at the same. There will be a startling increase in the perspective, a most sensible recession of the maximum distance; and as you raise the head you can actually see the horizon-line again draw near.[1]

Mind, I say nothing as yet about our estimate of the 'real' amount of this depth or distance. I only want to confirm its existence as a natural and inevitable optical consort of the two other optical dimensions. The field of view is always a *volume*-unit. Whatever be supposed to be its absolute and 'real' size, the relative sizes of its dimensions are functions of each other. Indeed, it happens perhaps most often that the breadth- and height-feeling take their absolute measure from the depth-feeling. If we plunge our head into a wash-basin, the felt nearness of the bottom makes us feel the lateral expanse to be small. If, on the contrary, we are on a mountain-top, the distance of the horizon carries with it in our judgment a proportionate height and length in the mountain-chains that bound it to our view. But as aforesaid, let us not consider the question

[1] What may be the physiological process connected with this increased sensation of depth, is hard to discover. It seems to have nothing to do with the parts of the retina affected, since the mere inversion of the picture (by mirrors, reflecting prisms, &c.), without inverting the head, does not seem to bring it about; nothing with sympathetic axial rotation of the eyes, which might enhance the perspective through exaggerated disparity of the two retinal images (see J. J. Müller, "Raddrehung u. Tiefendimension," *Sächs. Acad. Berichte*, 1875, page 125), for one-eyed persons get it as strongly as those with two eyes. I cannot find it to be connected with any alteration in the pupil or with any ascertainable strain in the muscles of the eye, sympathising with those of the body. The exaggeration of distance is even greater when we throw the head over backwards and contract our superior recti in getting the view, than when we bend forward and contract the inferior recti. Making the eyes diverge slightly by weak prismatic glasses has no such effect. To me, and to all whom I have asked to repeat the observation, the result is so marked that I do not well understand how such an observer as Helmholtz, who has carefully examined vision with inverted head can have overlooked it. (See his *Phys. Optik*, pp. 433, 723, 728, 772.) I cannot help thinking that anyone who can explain the exaggeration of the depth-sensation in this case, will at the same time throw much light on its normal constitution.

of absolute size now, — it must later be taken up in a thorough way. Let us confine ourselves to the way in which the three dimensions seen get their values fixed, *relatively to each other*.

Reid, in his *Inquiry into the Human Mind*, has a section "Of the Geometry of Visibles," in which he assumes to trace what the perceptions would be of a race of 'Idomenians' reduced to the sole sense of sight. Agreeing with Berkeley that sight alone can give no knowledge of the third dimension, he humorously deduces various ingenious absurdities in their interpretations of the material appearances before their eyes.

Now I firmly believe, on the contrary, that one of Reid's Idomenians would frame precisely the same conception of the external world that we do, if he had our intellectual powers.[1] Even were his very eyeballs fixed and not movable like ours, that would only retard, not frustrate, his education. For the same object, by alternately covering in its lateral movements different parts of his retina, would determine the mutual equivalencies of the first two dimensions of the field of view; and by exciting the physiological cause of his perception of depth in various degrees, it would establish a scale of equivalency between the first two and the third.

First of all, one of the sensations given by the object is chosen to represent its 'real' size and shape, in accordance with the principles laid down on pp. 191 and 193. One sensation measures the 'thing' present, and the 'thing' then measures the other sensations. The peripheral parts of the retina are equated with the central by receiving the image of the same object. This needs no elucidation in case the object does not change its distance or its front. But suppose, to take a more complicated case, that the object is a stick, seen first in its whole length, and then rotated round one of its ends; let this fixed end be the one near the eye. In this movement the stick's image will grow progressively shorter; its farther end will appear less and less widely separated from the fixed near end; soon it will be screened by it, and then re-appear on the opposite side, and finally on that side resume its original length. Suppose this movement to become a familiar experience;

[1] "In *Froriep's Notizen*, 1838, July, No. 133, is to be found a detailed account, with a picture, of an Esthonian girl, Eva Lauk, then 14 years old, born with neither arms nor legs, which concludes with the following words: 'According to the mother, her intellect developed quite as fast as that of her brother and sisters; in particular, she came as quickly to a right judgment of the size and distance of visible objects, although, of course, she had no use of hands'." (Schopenhauer, *Welt als Wille*, ii. 44.)

the mind will presumably react upon it after its usual fashion (which is that of unifying all data which it is in any way possible to unify), and prefer to consider it the movement of a constant object rather than the transformation of a fluctuating one. Now, the *sensation of depth* it receives is awakened more by the far than by the near end of the object. But how much depth? What shall measure its amount? Why, at the moment the far end is ready to be eclipsed, the difference of its distance from the near end's distance must be judged equal to the stick's whole length; but that length has already been judged equal to a certain optical sensation of breadth. Thus amounts of the visual depth-feeling become signs of fixed amounts of the visual breadth-feeling. The measurement of distance is, as Berkeley truly said, a result of suggestion and experience. But visual experience alone is adequate to produce it, and this he erroneously denied.

Suppose a colonel in front of his regiment at dress-parade, and suppose he walks at right angles towards the midmost man of the line; the line will visibly shrink as he advances, and at the same time the colonel will perceive his distance from the extreme man at each end of the line to increase relatively to his distance from the midmost man whom he approaches. When he finally touches this midmost man, his distance from the ends is felt by him to be at its maximum, although the line as a whole subtends hardly any retinal angle. *What* distance shall he judge it to be? Why, half the length of the regiment as it was originally seen, of course; but this length was a moment ago a retinal object spread out laterally before his sight. He has merely equated a retinal depth-feeling with a retinal breadth-feeling. If the regiment moved, and the colonel stood still, the result would be the same. In such ways as these, a creature endowed with eyes alone could hardly fail of measuring out all three dimensions of the space he inhabited. And we ourselves, I think, although we *may* often 'realise' distance in locomotor terms (as Berkeley says we must always do), yet do so no less often in terms of our retinal map, and always in this way the more spontaneously. Were this not so, the three dimensions could not possibly feel to us as homogeneous as they do, nor as commensurable *inter se*.

Let us, then, admit distance to be at least as genuinely optical a content of consciousness as either height or breadth. The question immediately returns, Can any of them be said in any strictness to be optical *sensations?* We have contended all along for the affirmative reply to this question, but must

now cope with difficulties greater than any that have assailed us hitherto.

A sensation is presumably the mental affection that follows most immediately upon the stimulation of the sense-tract. Its antecedent is directly physical, no psychic links, no acts of memory, inference or association intervening. Accordingly, if we suppose the nexus between neural process in the sense-organ on the one hand, and conscious affection on the other, to be by nature uniform, *the same process ought always to give the same sensation;* and conversely, *if what seems to be a sensation varies whilst the process in the sense-organ remains unchanged, the reason is presumably that it is really not a sensation but a higher mental product, whereof the variations depend on events occurring in other parts of the nervous system than the sense-organ in question, probably higher cerebral centres.*

Now the *size* of the field of view varies enormously in all three dimensions, without our being able to assign with any definiteness the process in the visual tract on which the variation depends. We just saw how impossible such assignment was in the case where turning down the head produces the enlargement. In general, the maximum feeling of depth or distance seems to take the lead in determining the apparent magnitude of the whole field, and the two other dimensions seem to follow. If, to use the former instance, I look close into a wash-basin, the lateral extent of the field shrinks proportionately to its nearness. If I look from a mountain, the things seen are vast in height and breadth, in proportion to the farness of the horizon. But when we ask what changes in the eye determine how great this maximum feeling of depth or distance (which is undoubtedly felt as a unitary vastness) shall be, we find ourselves quite unable to point to any one of them as being its absolutely regular concomitant. Convergence, accommodation, double and disparate images, differences in the parallactic displacement when we move our head, faintness of tint, dimness of outline, and smallness of the retinal image of objects named and known, are all processes that have *something to do* with the perception of 'far' and of 'near'; but the effect of each and any one of them in determining such a perception at one moment, may at another moment be reversed by the presence of some other sensible quality in the object, that makes us, evidently by reminding us of past experience, judge it to be at a different distance and of another shape. If we paint the inside of a pasteboard mask like the outside, and look at it with one

eye, the accommodation- and parallax-feelings are there, but fail to make us see it hollow, as it is. Our mental knowledge of the fact that human faces are always convex, overpowers them, and we directly perceive the nose to be nearer to us than the cheek instead of farther of.

The other organic tokens of farness and nearness are proved by similar experiments (of which we shall ere long speak more in detail) to have an equally fluctuating import. They lose all their value whenever the collateral circumstances favour a strong intellectual conviction that the object presented to the gaze contradicts their verdict—cannot be either *what* or *where* they, if left to themselves, would make us perceive it to be.

Now the query immediately arises: *Can* the feelings of these processes in the eye, if they are so easily neutralised and reversed by intellectual suggestions, ever have been direct sensations of distance at all? Ought we not rather to assume, since the distances we see *in spite* of them are conclusions from past experience, that the distances we see *by means* of them are equally such conclusions? Ought we not in short to say unhesitatingly that distance must be an intellectual and not a sensible content of consciousness? and that each of these eye-feelings serves as a mere signal to awaken this content, our intellect being so framed that sometimes it notices one signal more readily and sometimes another?

Reid long ago (*Inquiry*, c. vi. sec. 17) said, "It may be taken for a general rule, that things which are produced by custom may be undone or changed by disuse or by contrary custom. On the other hand, it is a strong argument that an effect is not owing to custom, but to the constitution of nature, when a contrary custom is found neither to change nor to weaken it." More briefly, a way of seeing things that can be unlearned was presumably learned, and only what we cannot unlearn is instinctive.

This seems to be Helmholtz's view, for he confirms Reid's maxim by saying in emphatic print, "No elements in our perception can be sensational which may be overcome or reversed by factors of demonstrably experimental origin. Whatever can be overcome by suggestions of experience must be regarded as itself a product of experience and custom. If we follow this rule it will appear that only *qualities* are sensational, whilst almost all *spatial* attributes are results of habit and experience."[1]

[1] *Physiol. Optik*, p. 438. Helmholtz's reservation of 'qualities' is inconsistent. Our judgments of light and colour vary as much as our judgments

This passage of Helmholtz's has obtained, it seems to me, an almost deplorable celebrity. The reader will please observe its very radical import. Not only would he, and does he, for the reasons we have just been ourselves considering, deny distance to be an optical sensation; but, extending the same method of criticism to judgments of size, shape and direction, and finding no single retinal or muscular process in the eyes to be indissolubly linked with any one of these, he goes so far as to say that all optical space-perceptions whatsoever must have an intellectual origin, and a content that no items of visual sensibility can account for.[1]

As Wundt and others agree with Helmholtz here, and as their conclusions, if true, are irreconcilable with all the sensationalism which I have been teaching hitherto, it clearly devolves upon me to defend my position against this new attack. The wisest order of procedure seems this: first, Reid's and Helmholtz's principle for distinguishing between what is sensible and what is intellectual, must be disproved by showing cases of other senses than sight in which it is violated; secondly, we must review the further facts of vision to which the principle is supposed to apply (— this will be the longest segment of our task); and thirdly, it must be shown that the facts admit of another interpretation completely in accordance with the tenor of the space-theory we have ourselves defended hitherto. I think we shall, without extreme difficulty, make good all the parts of this perhaps presumptuous-sounding program.[2]

of size, shape and place, and ought by parity of reasoning to be called intellectual products and not sensations. In other places he does treat colour as if it were an intellectual product.

[1] It is needless at this point to consider what Helmholtz's views of the nature of the intellectual space-yielding process may be. He vacillates— we shall later see how.

[2] Before embarking on this new topic it will be well to shelve, once for all, the problem of what is the physiological process that underlies the distance-feeling. Since one-eyed people have it, and are only inferior to the two-eyed in measuring its gradations, it can have no exclusive connexion with the double and disparate images produced by binocular parallax. Since people with closed eyes, looking at an after-image, do not usually see it draw near or recede with varying convergence, it cannot be simply constituted by the convergence-feeling. For the same reason, the feeling of accommodation cannot be identical with the feeling of distance. The differences of apparent parallactic movement between far and near objects as we move our head, cannot constitute the distance-sensation, for such differences may be easily reproduced experimentally (in the movements of visible spots against a background) without engendering any illusion of perspective. Finally, it is obvious that visible faintness, dimness and

(*b*) *Suggested Feelings can overpower Present Feelings.*

First, then, is it impossible that actual present sensations can be altered by suggestions of experience? In the case of hallucinations, we perfectly well know that the retinal image of the side of a room can be blotted out of view by an over-excitement of the cerebral sight-centres. And, as Stumpf remarks (*Ursprung der Raumvorstellung*, 210), hallucinations shade gradually into the illusions of everyday life. The filling-out of the blind spot is a permanent hallucination.

smallness *are* not *per se* the feeling of visible distance, however much in the case of well-known objects they may serve as signs to suggest it.

A certain maximum distance-value, however, being given to the field of view of the moment, whatever it be, the feelings that accompany the processes just enumerated, become so many *local signs* of the gradation of distances within this maximum depth. They help us to subdivide and measure it. Itself, however, is felt as a unit, a total distance-value, determining the vastness of the whole field of view, which accordingly appears as an abyss of a certain volume. And the question still persists, what neural process is it that underlies the sense of this distance-value?

Hering, who has tried to explain the gradations within it by the interaction of certain native distance-values belonging to each point of the two retinæ, seems willing to admit that the *absolute* scale of the space-volume within which the natively fixed relative distances shall appear is *not* fixed, but determined each time by "experience in the widest sense of the word" (*Beiträge*, p. 344). What he calls the *Kernpunkt* of this space-volume, is the point we are momentarily fixating. The absolute scale of the whole volume depends on the absolute distance at which this *Kernpunkt* is judged to lie from the person of the looker. "By an alteration of the localisation of the *Kernpunkt*, the *inner* relations of the seen space are nowise altered; this space in its totality is as a fixed unit, so to speak, displaced with respect to the self of the looker" (p. 345). But what constitutes the localisation of the *Kernpunkt* itself at any given time, except "Experience," *i.e.*, higher cerebral and intellectual processes, involving memory, Hering does not seek to define.

Stumpf, the other sensationalist writer who has best realised the difficulties of the problem, thinks that the primitive sensation of distance must have an immediate physical antecedent, either in the shape of "an organic alteration accompanying the process of accommodation, or else given directly in the specific energy of the optic nerve." In contrast with Hering, however, he thinks that it is the *absolute* distance of the spot fixated which is thus primitively, immediately and physiologically given, and not the relative distances of other things about this spot. These, he thinks, are originally seen in what, broadly speaking, may be termed one plane with it. Whether the distance of this plane, considered as a phenomenon of our primitive sensibility, be an invariable datum, or susceptible of fluctuation, he does not, if I understand him rightly, undertake dogmatically to decide, but inclines to the former view. For him then, as for Hering, higher cerebral processes of association, under the name of "Experience," are the authors of fully one-half part of the distance-perceptions we at any given time may have.

Hering's and Stumpf's theories are reported for the English reader by Mr. Sully (in MIND iii., pp. 172-6). Mr. Abbott, in his *Sight and Touch*

Faces, colours, shapes, change in the twilight, according as we imagine them to represent this or that object. Motionless things appear to move under the same circumstances. The colour of the marginal field of view is seen like that of the central in the absence of any reason why we should judge it different (as in looking at the blue sky or a white wall), though a small marginal patch seen alone would be quite different. Colour is surely a sensation!

But leave the optical realm, where everything has been made doubtful. Touch is a sensation; yet who has not felt

(pp. 96-8), gives a theory which is to me so obscure that I only refer the reader to its place, adding that it seems to make of distance a fixed function of retinal sensation as modified by focal adjustment. Besides these three authors I am ignorant of any, except Panum, who may have attempted to define distance as in any degree an immediate sensation. And with them the direct sensational share is reduced to a very small proportional part, in our completed distance-judgments.

Professor Lipps, in his singularly acute *Psychologische Studien* (pp. 69 ff.), argues, as Ferrier, in his review of Berkeley (*Philosophical Remains*, ii. 330 ff.), had argued before him, that it is *logically impossible* we should perceive the distance of anything from the eye by sight; for a *seen* distance can only be between *seen* termini; and one of the termini, in the case of distance from the eye, is the eye itself, which is not seen. Similarly of the distance of two points behind each other: the near one *hides* the far one, no space is seen between them. For the space between two objects to be *seen*, both must appear *beside* each other, then the space in question will be *visible*. On no other condition is its visibility possible. The conclusion is that things can properly be seen only in what Lipps calls a surface, and that our knowledge of the third dimension must needs be conceptual, not sensational or visually intuitive.

But no arguments in the world can prove a feeling which actually exists to be impossible. The feeling of depth or distance, of farness or awayness, does actually exist as a fact of our visual sensibility. All that Professor Lipps's reasonings prove concerning it is that it is not linear in its character, or in its immediacy fully homogeneous and consubstantial with the feeling of lateral distance between two seen termini; in short, that there are *two* sorts of optical sensation, each inexplicably due to a peculiar neural process. The neural process is easily discovered, in the case of lateral extension or spread-outness, to be the number of retinal nerve-ends affected by the light; in the case of protension or mere farness, it is more complicated and, as we have found, is still to seek. The two sensations unite in the primitive visual bigness. The measurement of their various amounts against each other obeys the general laws of all such measurements. We discover their equivalencies by means of objects, apply the same units to both, and translate them into each other so habitually that at last they get to seem to us even quite similar in kind. This final appearance of homogeneity is doubtless much facilitated by the fact that in binocular vision two points situated on the prolongation of the optical axis of *one* of the eyes, so that the near one hides the far one, are by the *other* eye seen laterally apart. Each eye has in fact a foreshortened lateral view of the other's line of sight. In *The Times* for Feb. 8, 1884, is an interesting letter by J. D. Dougal, who tries to explain by this reason why two-eyed rifle shooting has such advantages over shooting with one eye closed.

the sensible quality of touch change under his hand, as sudden contact with something moist, or hairy in the dark, awoke a shock of disgust or fear which faded into calm recognition of some familiar object? Even so small a thing as a crumb of potato on the table cloth, which we pick up, thinking it a crumb of bread, feels horrible for a few moments to our fancy, and different from what it is.

Weight or muscular feeling is a sensation; yet who has not heard the anecdote of Wollaston when Sir Humphrey Davy showed him the metal sodium which he had just discovered? "Bless me, how heavy it is," said Wollaston; showing that his *idea* of what metals as a class *ought* to be, had falsified the sensation he derived from a very light substance.

Smell is a sensation; yet who does not know how a suspicious odour about the house changes immediately its character the moment we have traced it to its perhaps small and insignificant source? When we have paid the faithless plumber for pretending to mend our drains, the intellect inhibits the nose from perceiving the same unaltered odour, until, perhaps, several days go by. As regards the ventilation or heating of rooms, we are apt to feel for some time as we think we ought to feel. If we believe the ventilator is shut, we feel the room close. On discovering it open, the oppression disappears.[1]

Taste is a sensation; yet there are but few people, in tasting wine, butter, oil, tea, meats, &c., who are not liable, temporarily at any rate, completely to misjudge the quality of what is in their mouth, through false expectation, or in con-

[1] An extreme instance of the power of imagination over the sense of smell is given in the following extract: "A patient called at my office one day in a state of great excitement from the effects of an offensive odour in the horse-car she had come in, and which she declared had probably emanated from some very sick person who must have been just carried in it. There could be no doubt that something had affected her seriously, for she was very pale, with nausea, difficulty in breathing, and other evidences of bodily and mental distress. I succeeded, after some difficulty and time, in quieting her, and she left, protesting that the smell was unlike anything she had ever before experienced and was something dreadful. Leaving my office soon after, it so happened that I found her at the street corner, waiting for a car: we thus entered the car together. She immediately called my attention to the same sickening odour which she had experienced in the other car, and began to be affected the same as before, when I pointed out to her that the smell was simply that which always emanates from the straw which has been in stables. She quickly recognised it as the same, when the unpleasant effects which arose while she was possessed with another perception of its character at once passed away." (C. F. Taylor, *Sensation and Pain*, p. 37; N. Y., 1882.)

sequence of some authority in such matters, standing by and dogmatically declaring the article to be different from what it is. In the matter of taste, it seems to me that most men are normally nearer to the trance-state than in respect of their other sensations. 'Suggestion' influences them more easily. The trance-subject's peculiarity is that *all* sensations are falsified and overpowered by the imagination. In all men *some* sensations are. And between the two extremes there are exemplifications of every intermediate degree.

As we approach the sense of Hearing, the conditions become even more like those of sight, and the deceptions which Reid's and Helmholtz's principle denies to be possible, abound. Everyone must recall some experience in which a sensation of sound altered its acoustic character as soon as the intellect referred it to a different source. The other day a friend was sitting in my room, when the clock, which has a rich low chime, began to strike: "Hollo!" said he, "hear that hand-organ in the garden," and was surprised at finding the real source of the sound. I had myself some years ago a very striking illusion of the sort. Sitting reading late one night, I suddenly heard a most formidable noise proceeding from the upper part of the house, which it seemed to fill. It ceased, and in a moment renewed itself. I went into the hall to listen, but it came no more. Resuming my seat in the room, however, there it was again, low, mighty, alarming, like a rising flood or the *avant-courier* of an awful gale. It came from all space. Quite startled, I again went into the hall, but it had already ceased once more. On returning a second time to the room, I discovered that it was nothing but the breathing of a little Scotch terrier which lay asleep on the floor. The noteworthy thing is that as soon as I recognised what it was, I was compelled to think it a different sound, and could not then *hear* it as I had heard it a moment before.[1]

[1] In an anecdote given by M. Delboeuf to prove a different point, this was probably also the case, though it is not so stated. "The illustrious P. J. van Beneden, senior, was walking one evening with a friend along a woody hill near Chaudfontaine. 'Don't you hear,' said the friend, 'the noise of a hunt on the mountain?' M. van Beneden listens and distinguishes in fact the giving-tongue of the dogs. They listen some time, expecting from one moment to another to see a deer bound by; but the voice of the dogs seems neither to recede nor approach. At last a countryman comes by, and they ask him who it is that can be hunting at this late hour. But he, pointing to some puddles of water near their feet, replies: 'Yonder little animals are what you hear'. And there there were in fact a number of toads of the species *Bombinator igneus*. . . . This batrachian emits at the pairing season a silvery or rather crystalline note. . . . Sad and pure, it is a voice in nowise resembling that of hounds giving chase." (*Examen Critique de la Loi Psychophysique*, 1883, p. 61.)

These examples, to which I could easily add others if I had room, are perhaps sufficient to break down in the reader's mind the authority of a dictum which has been left so strangely unquestioned. So far from its being true, as Helmholtz says, that a genuine present sensation cannot have its character transformed by suggestions from past experience, it would seem as if the exact contrary were the rule, and as if, with Stumpf,[1] we might reverse Helmholtz's query, and ask: "What would become of our sense-perceptions in case experience were *not* able so to transform them?" Adding, "All wrong perceptions that depend on peculiarities in the organs are more or less perfectly corrected by the influence of imagination following the guidance of experience".

If, therefore, among the facts of optical space-perception (which we must now proceed to consider in more detail) we find instances of an identical organic eye-process, giving us different perceptions at different times, in consequence of different collateral circumstances suggesting different objective facts to our imagination, we must not hastily conclude, with the school of Helmholtz and Wundt, that the organic eye-process pure and simple, without the collateral circumstances, is incapable of giving us any sensation of a spatial kind at all. We must rather seek to discover *by what means* the circumstances can so have transformed a space-sensation, which, but for their presence, would probably have been felt in its natural purity. And I may as well say now in advance, that we shall find the means to be nothing more or less than association—the suggestion to the mind of optical sensations not actually present, but more habitually associated with the "collateral circumstances" than the one which they now displace. But before this conclusion emerges, it will be necessary to have reviewed the most important facts of optical space-perception, in relation to the organic conditions on which they depend. Readers acquainted with German optics will excuse what is already familiar to them in the following section.

(*c*) *The Two Theories of Retinal Perception.*

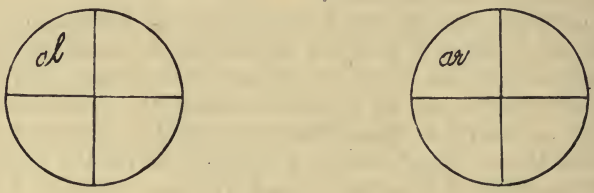
Let us begin the long and rather tedious inquiry by the most important case. Physiologists have long sought for a simple law by which to connect the seen direction and distance of objects with the retinal impressions they pro-

[1] *Op. cit.* p. 214.

duce. Two principal theories have been held on this matter, the " theory of identical points," and the " theory of projection "—each incompatible with the other, and each beyond certain limits becoming inconsistent with the facts.

The theory of identical points starts from the truth that on both retinæ an impression on the upper half makes us perceive an object as below, on the lower half as above, the horizon; and on the right half an object to the left, on the left half one to the right, of the median line. Thus each quadrant of one retina corresponds as a whole to the *similar* quadrant of the other; and within two similar quadrants,

Fig. 1.



al and *ar*, for example, there should, if the correspondence were consistently carried out, be geometrically similar points which, if impressed at the same time by light emitted from the same object, should cause that object to appear in the same direction to either eye. Experiment verifies this surmise. If we look at the starry vault with parallel eyes, the stars all seem single; and the laws of perspective show that under the circumstances, the parallel light rays coming from each star must impinge on points within either retina which *are* geometrically similar to each other. The same result may be more artificially obtained. If we take two exactly similar pictures, smaller, or at least no larger, than those on an ordinary stereoscopic slide, and if we look at them as stereoscopic slides are looked at, that is, at one with each eye (a median partition confining the view of either eye to the picture opposite it), we shall see but one flat picture, all of whose parts appear sharp and single.[1] Identical points

[1] Just so, a pair of spectacles held an inch or so from the eyes seem like one large median glass. The faculty of seeing stereoscopic slides single without an instrument, is of the utmost utility to the student of physiological optics, and persons with strong eyes can easily acquire it. The only difficulty lies in dissociating the degree of accommodation from the degree of convergence which it usually accompanies. If the right picture is focussed by the right eye, the left by the left eye, the optic axes must

being impressed, both eyes see their object in the same direction, and the two objects consequently coalesce into one.

The same thing may be shown in still another way. With fixed head converge the eyes upon some conspicuous objective point behind a pane of glass; then close either eye alternately and make a little ink-mark on the glass 'covering' the object as seen by the eye which is momentarily open. On looking now with both eyes the ink-marks will seem single, and in the same direction as the objective point. Conversely let the eyes converge on a single ink-spot on the glass, and then by alternate shutting of them let it be noted what objects behind the glass the spot covers to the right and left eye respectively. Now with both eyes open, both these objects and the spot will appear in the same place, one or other of the three becoming more distinct according to the fluctuations of retinal attention.[1]

Now what is the direction of this common place? The only way of defining the direction of an object is by *pointing to it*. Most people, if asked to look at an object over the horizontal edge of a sheet of paper which conceals their hand and arm, and then to point their finger at it, raising the hand gradually so that at last a finger-tip will appear above the sheet of paper, are found to place the finger not between either eye and the object, but between the latter and the root of the nose, and this, whether both eyes or either alone be used. Hering and Helmholtz express this by saying that we judge of the direction of objects as they would appear to an imaginary cyclopean eye, situated between our two real eyes, and with its optical axis bisecting the angle of convergence of the latter. Our two retinæ act, according to Hering, as if they were superposed in the place of this imaginary double-eye; we see by the corresponding points of each, situated far asunder as they really are, just as we *should* see if they were superposed and could both be excited together.

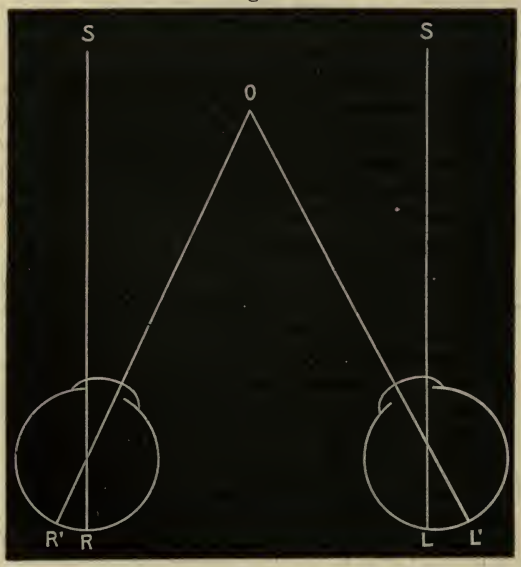
either be parallel or converge upon an imaginary point some distance behind the plane of the pictures, according to the size and distance apart of the pictures. The accommodation, however, has to be made for the plane of the pictures itself, and a near accommodation with a far-off convergence is something that the ordinary use of our eyes never teaches us to effect.

[1] These two observations prove the law of identical direction only for objects which excite the foveæ or lie in the line of direct looking. Observers skilled in indirect vision can, however, more or less easily verify the law for outlying retinal points.

The judgment of objective singleness and that of identical direction seem to hang necessarily together. And that of identical direction seems to carry with it the necessity of a common origin, between the eyes or elsewhere, from which all the directions felt may seem to be estimated. This is why the cyclopean eye is really a fundamental part of the formulation of the theory of identical retinal points, and why Hering, the greatest champion of this theory, lays so much stress upon it.

It is an immediate consequence of the law of identical projection of images on geometrically similar points that images which fall upon geometrically *disparate* points of the two retinæ should be projected in disparate directions and that their objects should consequently appear in two places or double. Take the parallel rays from a star falling upon two eyes which converge upon a near object O, instead of being parallel, as in the previously instanced case. If SL and SR in Fig. 2 be the parallel rays, each of them will fall upon the nasal half of the retina which it strikes.

Fig. 2.



But the two nasal halves are disparate, geometrically *symmetrical*, not geometrically *similar*. The image on the left one will therefore appear as if lying in a direction leftward of the cyclopean eye's line of sight; the image of the right one will appear far to the right of the same direction.

The star will in short be seen double,—'homonymously' double.

Conversely if the star be looked at directly with parallel axes, O will be seen double, because its images will affect the outer or cheek halves of the two retinæ, instead of one outer and one nasal half. The position of the images will here be reversed from that of the previous case. The right eye's image will now appear to the left, the left eye's to the right —the double images will be 'heteronymous'.

The same reasoning and the same result ought to apply where the object's place with respect to the direction of the two optic axes is such as to make its images fall not on non-similar retinal halves but on non-similar parts of similar halves. Here of course the directions of projection will be less widely disparate than in the other case, and the double images should appear to lie less widely apart.

Careful experiments made by many observers according to the so-called haploscopic method confirm this law and show that *corresponding points, of single visual direction*, exist upon the two retinæ. For the detail of these one must consult the special treatises.

Note now an important consequence. If we take a stationary object and allow the eyes to vary their direction and convergence, a purely geometrical study will show that there will be some positions in which its two images impress corresponding retinal points, but more in which they impress disparate points. The former constitute the so-called horopter, and their discovery has been attended with great mathematical difficulty. Objects or parts of objects which lie in the eyes' horopter at any given time cannot appear double. Objects lying out of the horopter would seem, if the theory of identical points were strictly true, necessarily and always to appear double.

Here comes the first great conflict of the identity-theory with experience. Were the theory true, we ought all to have an intuitive knowledge of the horopter as the line of distinctest vision. Objects placed elsewhere ought to seem, if not actually double, at least blurred. And yet no living man makes any such distinction between the parts of his field of vision. To most of us the whole field appears single, and it is only by rare accident or by special education that we ever catch a glimpse of a double image. In 1838, Wheatstone, in his truly classical memoir on binocular vision and the stereoscope,[1] showed that the disparateness of the

[1] This essay, published in the *Philosophical Transactions*, contains the germ of almost all the methods applied since to the study of optical percep-

points on which the two images of an object fall does not within certain limits affect its seen singleness at all, but rather the *distance* at which it shall appear. Wheatstone made an observation, moreover, which subsequently became the bone of much hot contention, in which he strove to show that not only might disparate images fuse, but images on corresponding or identical points might be seen double.[1]

I am unfortunately prevented by the weakness of my own eyes from experimenting enough to form a decided personal opinion on the matter. It seems to me, however, that the balance of evidence is against the Wheatstonian interpretation, and that disparate points may fuse, without identical points for that reason ever giving double images. The two questions, "Can we see single with disparate points?" and "Can we see double with identical points?" although at the first blush they may appear, as to Helmholtz they appear, to be but two modes of expressing the same inquiry, are in reality distinct. The first may quite well be answered affirmatively and the second negatively.

Add to this that the experiment quoted from Helmholtz above by no means always succeeds, but that many individuals place their finger between the object and *one* of their eyes, oftenest the right.[2] Finally, observe that the identity-theory, with its Cyclopean starting-point for all lines of direction, gives by itself no ground for the *distance* on any line at which an object shall appear, and has to be helped out in this respect by subsidiary hypotheses, which, in the hands of Hering and others, have become so complex as easily to fall a prey to critical attacks; and it will soon seem

tion. It seems a pity that England, leading off so brilliantly the modern epoch of this study, should so quickly have dropped out of the field. Almost all subsequent progress has been made in Germany, Holland and, *longo intervallo*, America.

[1] This is no place to report this controversy, but a few bibliographic references may not be inappropriate. Wheatstone's own experiment is in section 12 of his memoir. In favour of his interpretation see Helmholtz, *Phys. Opt.*, pp. 737-9; Wundt, *Physiol. Psychol.*, 2te Aufl., pp. 144; Nagel, *Sehen mit zwei Augen*, pp. 78-82. Against Wheatstone see Volkmann, *Arch. f. Ophth.*, v. 2-74 and *Untersuchungen*, p. 266; Hering, *Beiträge zur Physiologie*, 29-45, also in Hermann's *Hdbch. d. Physiol.*, Bd. iii., 1 Th., p. 435; Aubert, *Physiologie d. Netzhaut*, p. 322; Schön, *Archiv. f. Ophthal.*, xxiv., 1, p. 56-65; and Donders, *Ibid.*, xiii., 1, p. 15 and note.

[2] When we see the finger the whole time, we usually put it in the line joining object and left eye if it be the left finger, joining object and right eye if it be the right finger. Microscopists, marksmen or persons one of whose eyes is much better than the other almost always refer directions to a single eye, as may be seen by the position of the shadow on their face when they point at a candle-flame.

as if the law of identical seen directions by corresponding points, although a simple formula for expressing concisely many fundamental phenomena, is by no means an adequate account of the whole matter of retinal perception.[1]

Does *the projection-theory* fare any better? This theory admits that each eye sees the object in a different direction from the other, along the line, namely, passing from the object through the middle of the pupil to the retina. A point directly fixated is thus seen on the optical axes of both eyes. There is only one point, however, which these two optical axes have in common, and that is the point to which they converge. Everything directly looked at is seen at this point and is thus seen both single and at its proper distance. It is easy to show the incompatibility of this theory with the theory of identity. Take an objective point (like O in Fig. 2, when the star is looked at) casting its images R′ and L′ on geometrically dissimilar parts of the two retinæ and affecting the outer half of each eye. On the identity-theory it ought necessarily to appear double, whilst on the projection-theory there is no reason whatever why it should not appear single, provided only it be located by the judgment on each line of visible direction, neither nearer nor farther than its point of intersection with the other line.

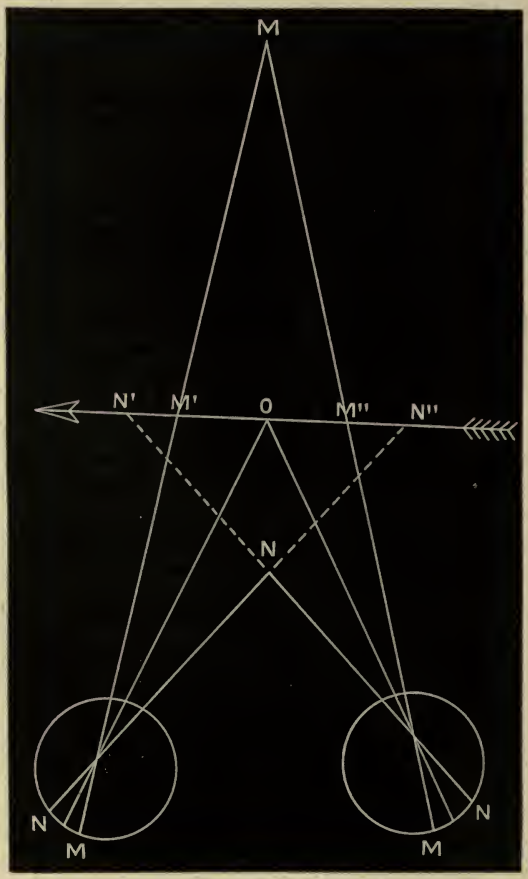
Every point in the field of view ought, in truth, if the projection-theory were uniformly valid, to appear single, entirely irrespective of the varying positions of the eyes, for from every point of space two lines of visible direction pass to the two retinæ; and at the intersection of these lines, or just where the point is, there, according to the theory, it should appear. The objection to this theory is thus precisely the reverse of the objection to the identity-theory. If the latter ruled, we ought to see most things double all the time. If the projection-theory ruled, we ought never to see anything double. As a matter of fact we get too few double

[1] Professor Joseph Leconte, who believes strongly in the identity-theory, has embodied the latter in a pair of laws of the relation between positions seen single and double, near or far, on the one hand, and convergences and retinal impressions, on the other, which, though complicated, seems to me by far the best descriptive formulation yet made of the normal facts of vision. His account is easily accessible to the reader in his volume *Sight*, of the "International Scientific Series," bk. ii., c. 3, so I say no more about it now, except that it does not solve any of the difficulties we are noting in the identity-theory, nor account for the other fluctuating perceptions of which we go on to treat.

images for the identity-theory, and too many for the projection-theory.

The partisans of the projection-theory, beginning with Aguilonius, have always explained double images as the result of an erroneous judgment of the *distance* of the object, the images of the latter being projected by the imagination along the two lines of visible direction either nearer or farther than the point of intersection of the latter. A diagram will make this clear.

Fig. 3.



O being the point looked at, M being an object farther, and N an object nearer than it, will send the lines of visible

direction MM and NN to the two retinæ. If N be judged as far as O, it must necessarily lie where the two lines of visible direction NN intersect the plane of the arrow, or in two places, at N′ and at N″. If M be judged as near as O, it must for the same reason form two images at M′ and M″.

It is, as a matter of fact, true that we often misjudge the distance in the way alleged. If the reader will hold his fore-fingers, one beyond the other, in the median line, and fixate them alternately, he will see the one not looked at, double; and he will also notice that it appears nearer to the plane of the one looked at, whichever the latter may be, than it really is. Its changes of apparent size as the convergence of the eyes alter, also prove the change of apparent distance. The distance at which the axes converge seems, in fact, to exert a sort of attraction upon objects situated elsewhere. Being the distance of which we are most acutely sensible, it invades, so to speak, the whole field of our perception. If two half-dollars be laid on the table a few inches apart, and the eyes fixate steadily the point of a pen held in the median line at varying distances between the coins and the face, there will come a distance at which the pen stands between the left half-dollar and the right eye, and the right half-dollar and the left eye. The two half-dollars will then coalesce into one; and this one will show its apparent approach to the pen-point by seeming suddenly much reduced in size.[1]

Yet, in spite of this tendency to inaccuracy, we are never actually mistaken about the half-dollar being behind the pen-point. It may not seem far enough off, but still it is farther than the point. In general it may be said that where the objects are known to us, no such illusion of distance occurs in any one as the theory would require. And in some observers, Hering for example, it seems hardly to occur at all. If I look into infinite distance and get my finger in double images, they do not seem infinitely far off. To make objects at different distances seem equi-distant, careful precautions must be taken to have them alike in appearance, and to exclude all outward reasons for ascribing to the one a different location from that ascribed to the other. Thus Donders tries to prove the law of projection by taking two similar electric sparks, one behind the other on a dark ground, one seen double; or an iron rod placed so near to the eyes that its double images seem as broad as that of a fixated stove-pipe, the top and bottom of the objects being

[1] Naturally it takes a smaller object at a less distance to cover by its image a constant amount of retinal surface.

cut off by screens so as to prevent all suggestions of perspective, &c. The three objects in each experiment seem in the same place.[1]

Add to this the impossibility, recognised by *all* observers, of ever seeing double with the *foveæ*, and the fact that authorities as able as those quoted in the note on Wheatstone's observation, deny that they see double then with identical points, and we are forced to conclude that the projection-theory, like its predecessor, breaks down. Neither formulates exactly or exhaustively a law for all our perceptions.

What does each theory try to do? To make of seen location a *fixed function* of retinal impression. Other facts may be brought forward to show how far from fixed are the perceptive functions of retinal impressions. We alluded a while ago to the extraordinary ambiguity of the retinal image as a revealer of magnitude. Produce an after-image of the sun and look at your finger-tip;—it will be smaller than your nail. Project it on the table, and it will be as big as a strawberry; on the wall, as large as a plate; on yonder mountain, bigger than a house. And yet it is an unchanged retinal impression. Prepare a sheet with the following figures strongly marked upon it, and get by direct fixation a distinct after-image of each.

Fig. 4.

Project the after-image of the cross upon the upper left-hand part of the wall, it will appear as in Fig. 5; on the upper right hand it will appear as in Fig. 6. The circle similarly

Fig. 5.

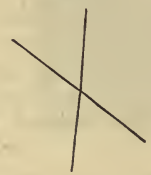


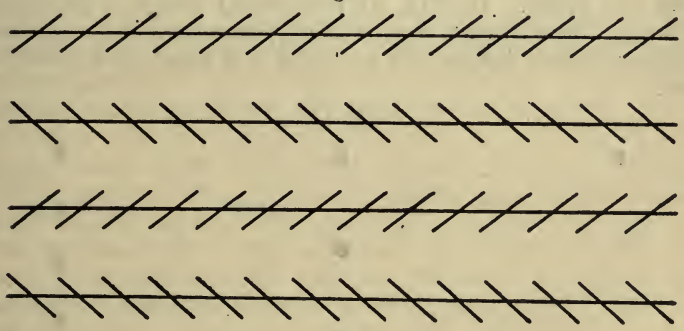
Fig. 6.

[1] *Archiv f. Ophthal.*, Bd. xvii., Abth. 2, pp. 44-6 (1871).

projected will be distorted into two different ellipses. If the two parallel lines be projected upon the ceiling or floor far in front, the farther ends will diverge; and if the three parallel lines be thrown on the same surfaces, the upper pair will seem farther apart than the lower.

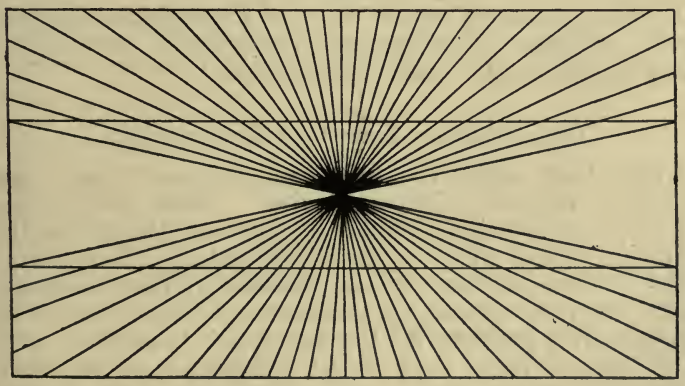
Adding certain lines to others has the same distorting effect. In what is known as Zöllner's pattern (Fig. 7), the long parallels tip towards each other the moment we draw the short slanting lines over them, yet their retinal images

Fig. 7.



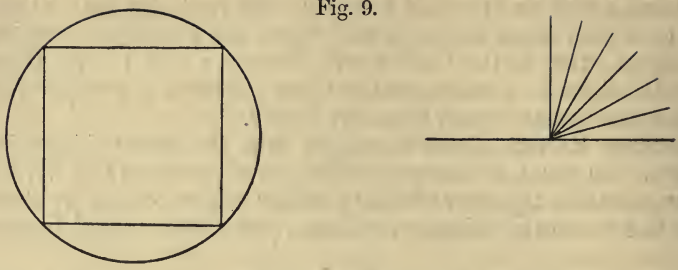
are the same they always were. A similar distortion of parallels appears in Fig. 8.

Fig. 8.



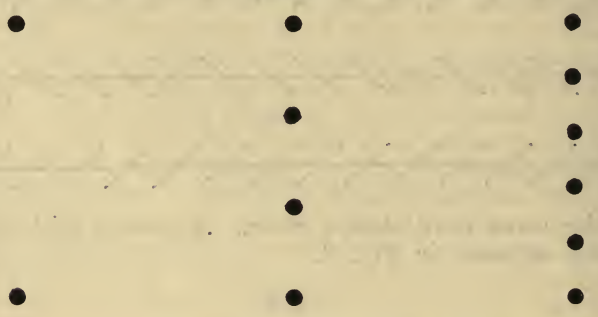
Drawing a square inside the circle (Fig. 9) gives to the outline of the latter an indented appearance where the square's corners touch it. Drawing the radii inside of one of the right angles in the same figure makes it seem larger

Fig. 9.



than the other. In Fig. 10, the retinal image of the space between the extreme dots is in all three lines the same, yet it seems much larger the moment it is filled up with other dots.

Fig. 10.



In the stereoscope certain pairs of lines which look single under ordinary circumstances immediately seem double when we add certain other lines to them.[1]

(*d*) *Ambiguous Import of Eye-movements.*

These facts show the indeterminateness of the space-import of various *retinal impressions.* Take now the *eye's movements,* and we find a similiar vacillation. When we follow a moving object with our gaze, the motion is 'voluntary'; when our eyes oscillate to and fro after we have made ourselves dizzy by spinning around, it is 'reflex'; and when the eyeball is pushed with the finger, it is 'passive'. Now, in all three of these cases we get a feeling from the movement as it effects itself. But the objective perceptions to which the feeling assists us are by no means the same. In the first case we may see a stationary field of view with one

[1] Volkmann, p. 253.

moving object in it; in the second, the total field swimming more or less steadily in one direction; in the third, a sudden jump or twist of the same total field.

The feelings of convergence of the eyeballs permit of the same ambiguous interpretation. When objects are near we converge strongly upon them in order to see them; when far, we set our optic axes parallel. But the exact degree of convergence fails to be felt; or rather, being felt, fails to tell us the absolute distance of the object we are regarding. Wheatstone arranged his stereoscope in such a way that the size of the retinal images might change without the convergence altering; or conversely, the convergence might change without the retinal image altering. Under these circumstances, he says,[1] the object seemed to approach or recede in the first case, without altering its size; in the second, to change its size without altering its distance—just the reverse of what might have been expected. Wheatstone adds, however, that "fixing the attention" converted each of these perceptions into its opposite. The same perplexity occurs in looking through prismatic glasses, which alter the eyes' convergence. We cannot decide whether the object has come nearer, or grown larger, or both, or neither; and our judgment vacillates in the most surprising way. We may even make our eyes diverge, and the object will none the less appear at a finite distance. When we look through the stereoscope, the picture seems at no determinate distance. These and other facts have led Helmholtz to deny that the feeling of convergence has any very exact value as a distance-measurer.

With the feelings of accommodation it is very much the same. Donders has shown[2] that the apparent magnifying power of spectacles of moderate convexity hardly depends at all upon their enlargement of the retinal image, but rather on the relaxation they permit of the muscle of accommodation. This suggests an object farther off, and consequently a much larger one, since its retinal size rather increases than diminishes. But in this case the same vacillation of judgment as in the previously mentioned case of convergence takes place. The recession made the object seem larger, but the apparent growth in size of the object now makes it look as if it came nearer instead of receding. The effect thus contradicts its own cause. Everyone is conscious, on

[1] *Philosophical Transactions*, 1852, p. 4.

[2] *Anomalies of Accommodation and Refraction* (New Sydenham Soc. Transl.), London, 1864, p. 155.

first putting on a pair of spectacles, of a doubt whether the field of view draws near or retreats.[1]

There is still another deception, occurring in persons who have had one eye-muscle suddenly paralysed. This deception has led Wundt to affirm that the eyeball-feeling proper, the incoming sensation of effected rotation, tells us only of the direction of our eye-movements, but not of their whole extent.[2] For this reason, and because not only Wundt, but many other authors, think the phenomena in these partial paralyses demonstrate the existence of a feeling of innervation, a feeling of the outgoing nervous current, opposed to every afferent sensation whatever, it seems proper to note the facts with a certain degree of detail.

Suppose a man wakes up some morning with the external rectus muscle of his right eye half-paralysed, what will be the result? He will be enabled only with great effort to rotate the eye so as to look at objects lying far off to the right. Something in the effort he makes will make him feel as if the object lay much farther to the right than it really is. If the left and sound eye be closed, and he be asked to touch rapidly with his finger an object situated towards his right, he will point the finger to the right of it. The current explanation of the 'something' in the effort which causes this deception is, that it is the sensation of the outgoing discharge from the nervous centres, the "feeling of innervation," to use Wundt's expression, requisite for bringing the open eye with its weakened muscle to bear upon the object to be touched. If that object be situated 20 degrees to the right, the patient has now to innervate as powerfully to turn the eye those 20 degrees as formerly he did to turn the eye 30 degrees. He consequently believes as before that he *has* turned it 30 degrees; until, by a newly acquired custom, he learns the altered spatial import of all the discharges his brain makes into his right abducens nerve.

The "feeling of innervation," maintained to exist by this and other observations, plays an immense part in the space-theories of certain philosophers, especially Wundt. I have elsewhere tried to show that the observations by no means

[1] These strange contradictions have been called by Aubert "secondary" deceptions of judgment. See *Grundziige d. Physiologischen Optik*, Leipzig, 1876, pp. 601, 615, 627. One of the best examples of them is the small size of the moon as first seen through a telescope. It is larger and brighter, so we see its details more distinctly and judge it nearer. But because we judge it so much nearer we think it must have grown smaller. *Cf.* Charpentier in *Jahresb.* x. 430.

[2] *Revue Philosophique*, iii. 9, p. 220.

warrant the conclusions drawn from them, and that the feeling in question is probably a wholly fictitious entity.[1] Meanwhile it suffices to point out that even those who set most store by it are compelled, by the readiness with which the translocation of the field of view becomes corrected and further errors avoided, to admit that the precise space-import of the supposed sensation of outgoing energy is as ambiguous and indeterminate as that of any other of the eye-feelings we have considered hitherto.

I have now given what no one will call an under-statement of the facts and arguments by which it is sought to banish the credit of directly revealing space from each and every kind of eye-sensation taken by itself. The reader will confess that they make a very plausible show, and most likely wonder whether my own theory of the matter can rally from their damaging evidence. But the case is far from being hopeless; and the introduction of a discrimination hitherto unmade will, if I mistake not, easily vindicate the view adopted in these pages, whilst at the same time it makes ungrudging allowance for all the ambiguity and illusion on which so much stress is laid by the advocates of the intellectualist theory.

(*e*) *The Choice of the Visual Reality.*

We *have* native and fixed optical space-sensations; *but experience leads us to select certain ones from among them to be the exclusive bearers of reality: the rest become mere signs and suggesters of these.* The factor of *selection*, on which we have already laid so much stress, here as elsewhere is the solving word of the enigma. If Helmholtz, Wundt and the rest, with an ambiguous retinal sensation before them, meaning now one size and distance, and now another, had not contented themselves with merely saying:—The size and distance are not this sensation, they are something beyond it which it merely calls up, and whose own birth-place is afar—in 'synthesis' (Wundt) or in 'experience' (Helmholtz) as the case may

[1] Cp. "The Feeling of Effort" in the *Anniversary Memoirs of the Boston Society of Natural History*, Boston, 1880. The only fact I am acquainted with which still seems to make for a feeling of innervation is the illusion of movement described by Mach on pp. 65-6 of his *Beiträge zur Analyse der Empfindungen* (1886). Not having yet experimentally verified Mach's observation, I am unable to criticise his explanation of it. The consequence is that the theory of the *Innervations gefühl* has the last word in the discussion. But its existence or non-existence is quite immaterial, as far as my own space-theory is concerned.

be ; if they had gone on definitely to ask and definitely to answer the question, What are the size and distance in their proper selves? they would not only have escaped the present deplorable vagueness of their space-theories, but they would have seen that the objective spatial attributes 'signified' are simply and solely *certain other optical sensations now absent*, but which the present sensations suggest.

What, for example, is the slant-legged cross which we think we see on the wall when we project the rectangular after-image high up towards our right or left (Figs. 5 and 6)? Is it not in very sooth a retinal sensation itself? An imagined sensation, not a felt one, it is true, but none the less essentially and originally sensational or retinal for all that,—the sensation, namely, we should receive if a 'real' slant-legged cross stood on the wall *in front of us* and threw its image on our eye. That image is not the one our retina now holds. Our retina now holds the image which a cross of square shape throws when in front, but which a cross of the slant-legged pattern *would* throw, provided it were actually on the wall in the distant place at which we look. Call this actual retinal image the 'square' image. The square image is then one of the innumerable images the slant-legged cross can throw. Why should another one, and that an absent one, of those innumerable images be picked out to represent exclusively the slant-legged cross's 'true' shape? Why should that absent and imagined slant-legged image displace the present and felt square image from our mind? Why, when the objective cross gives us so many shapes, as it varies its position, should we think we feel the true shape only when the cross is directly in front? And when that question is answered, how can the absent and represented feeling of a slant-legged figure so successfully intrude itself into the place of a presented square one?

Before answering either question, let us be doubly sure about our facts, and see how true it is that in our dealings with objects we always do pick out *one* of the visual images they yield, to constitute their real form or size.

The matter of size has been already touched upon (p. 192), and no more need be said of it here. As regards shape, almost all the retinal shapes objects throw are perspective 'distortions'. Square table-tops constantly present two acute and two obtuse angles ; circles drawn on our wall-papers, our carpets or on sheets of paper usually show like ellipses ; parallels approach as they recede ; human bodies are foreshortened ; and the transitions from one to another

of these altering forms are infinite and continual. Out of the flux however, one phase always stands prominent. It is the form the object has when we see it easiest and best; and that is when our eyes and the object both are in what may be called the 'normal' position. In this position our head is upright and our optic axes either parallel or symmetrically convergent; the plane of the object is perpendicular to the visual plane; and if the object is one containing many lines it is turned so as to make them, as far as possible, either parallel or perpendicular to the visual plane. In this situation it is that we compare all shapes with each other; here every exact measurement and decision is made.[1]

It is very easy to see why the normal situation should have this extraordinary pre-eminence. First, it is the position in which we easiest hold anything we are examining in our hands; second, it is a turning-point between all right- and all left-hand perspective views of a given object; third, it is the only position in which symmetrical figures seem symmetrical and equal angles seem equal; fourth, it is often that starting-point of movements from which the eye is least troubled by axial rotations, by which *superposition*[2] of the retinal images of different lines and different parts of the same line is easiest produced, and consequently by which the eye can make the best comparative measurements in its sweeps. All these merits single the normal position out to be chosen. No other point of view offers so many æsthetic and practical advantages. Here we believe we see the object as it *is;* elsewhere, only as it seems. Experience and custom soon teach us, however, that the seeming appearance passes into the real one by continuous gradations. They teach us, moreover, that seeming and being may be strangely interchanged. Now a real circle may slide into a seeming ellipse; now an ellipse may, by sliding in the same direction, become a seeming circle; now a rectangular cross grows slant-legged; now a slant-legged one grows rectangular.

Almost any form in oblique vision may be thus a derivative of almost any other in 'primary' vision; and we must learn, when we get one of the former appearances, to translate it into the appropriate one of the latter class; we must learn of what optical 'reality' it is one of the optical signs.

[1] The only exception seems to be when we expressly wish to abstract from particulars, and to judge of the general 'effect'. Witness ladies trying on new dresses with their heads inclined and their eyes askance; or painters in the same attitude judging of the 'values' in their pictures.

[2] The importance of Superposition will appear later on.

Having learned this, we do but obey that law of economy or simplification which dominates our whole psychic life, when we attend exclusively to the 'reality' and ignore as much as our consciousness will let us the 'sign' by which we came to apprehend it. The signs of each reality being multiple and the 'reality' one and constant, we gain the same mental relief by abandoning the former for the latter, that we do when we abandon a mental image, with all its fluctuating characters, for the perfectly definite and unchangeable *name* it suggests. The selection of the several 'normal' appearances from out of the jungle of our optical experiences, to serve as the real sights of which we shall think, is psychologically a parallel phenomenon to the habit of thinking in words, and has a like use. Both are substitutions of terms few and fixed for terms manifold and vague.

5. *The Intellectualist Theory of Space.*

This service of sensations as mere signs, to be ignored when they have evoked the other sensations which are their significates, was noticed first by Berkeley and remarked in many passages, as the following :—

"Signs, being little considered in themselves, or for their own sake, but only in their relative capacity and for the sake of those things whereof they are signs, it comes to pass that the mind overlooks them, so as to carry its attention immediately on to the things signified . . . which in truth and strictness are not *seen*, but only *suggested* and *apprehended* by means of the proper objects of sight which alone are seen" (*Divine Visual Language*, § 12).

Berkeley of course erred in supposing that the thing suggested was not even *originally* an object of sight, as the sign now is which calls it up. Reid expressed Berkeley's principle in yet clearer language :—

"The visible appearances of objects are intended by nature only as signs or indications, and the mind passes instantly to the things signified, without making the least reflection upon the sign, or even perceiving that there is any such thing. . . . The mind has acquired a confirmed and inveterate habit of inattention to them (the signs). For they no sooner appear than, quick as lightning, the thing signified succeeds and engrosses all our regard. They have no name in language ; and although we are conscious of them when they pass through the mind, yet their passage is so quick and so familiar that it is absolutely unheeded ; nor do they leave any footsteps of themselves, either in the memory or imagination" (*Inquiry*, chap. v., §§ 2, 3).

If we review the facts we shall find every grade of non-attention between the extreme form of overlooking mentioned by Reid (or forms even more extreme still) and complete conscious perception of the sensation present. Sometimes it is literally impossible to become aware of the latter.

Sometimes a little artifice or effort easily leads us to discern it together, or in alternation, with the 'object' it reveals. Sometimes the present sensation is held to *be* the object or to reproduce its features in undistorted shape, and *then*, of course, it receives the mind's full glare.

The deepest inattention is to subjective optical sensations, strictly so called, or those which are not signs of outer objects at all. Helmholtz's treatment of these phenomena, *muscae volitantes*, negative after-images, double images, &c., is very satisfactory. He says:—

"We only attend with any ease and exactness to our sensations in so far forth as they can be utilised for the knowledge of outward things; and we are accustomed to neglect all those portions of them which have no significance as regards the external world. So much is this the case that for the most part special artifices and practice are required for the observation of these latter more subjective feelings. Although it might seem nothing should be easier than to be conscious of one's own sensations, experience nevertheless shows that often enough either a special talent like that showed in eminent degree by Purkinje, or accident or theoretic speculation, are necessary conditions for the discovery of subjective phenomena. Thus, for example, the blind spot on the retina was discovered by Mariotte by the theoretic way; similarly by me the existence of 'summation' tones in acoustics. In the majority of cases accident is what first led observers whose attention was especially exercised on subjective phenomena to discover this one or that; only where the subjective appearances are so intense that they interfere with the perception of objects are they noticed by all men alike. But if they have once been discovered it is for the most part easy for subsequent observers who place themselves in proper conditions and bend their attention in the right direction to perceive them. But in many cases—for example, in the phenomena of the blind spot, in the discrimination of overtones and combination-tones from the ground-tone of musical sounds, &c.—such a strain of the attention is required, even with appropriate instrumental aids, that most persons fail. The very after-images of bright objects are by most men perceived only under exceptionally favourable conditions, and it takes steady practice to see the fainter images of this kind. It is a commonly recurring experience that persons smitten with some eye-disease which impairs vision suddenly remark for the first time the *muscae volitantes* which all through life their vitreous humour has contained, but which they now firmly believe to have arisen since their malady; the truth being that the latter has only made them more observant of all their visual sensations. There are also cases where one eye has gradually grown blind, and the patient lived for an indefinite time without knowing it, until, through the accidental closure of the healthy eye alone, the blindness of the other was brought to attention.

"Most people when first made aware of binocular double images are uncommonly astonished that they should never have noticed them before, although all through their life they had been in the habit of seeing singly only those few objects which were about equally distant with the point of fixation, and the rest, those nearer and farther, which constitute the great majority, had always been double.

"We must then *learn* to turn our attention to our particular sensations, and we learn this commonly only for such sensations as are means of

cognition of the outer world. Only so far as they serve this end have our sensations any importance for us in ordinary life. Subjective feelings are mostly interesting only to scientific investigators ; were they remarked in the ordinary use of the senses, they could only cause disturbance. Whilst, therefore, we reach an extraordinary degree of fineness and security in objective observation, we not only do not reach this where subjective phenomena are concerned, but we actually attain in a high degree the faculty of overlooking these altogether, and keeping ourselves independent of their influence in judging of objects, even in cases where their strength might lead them easily to attract our attention" (*Physiol. Optik*, pp. 431-2).

Even where the sensation is not merely subjective, as in the cases of which Helmholtz speaks, but is a sign of something outward, we are also liable, as Reid says, to overlook its intrinsic quality and attend exclusively to the image of the 'thing' it suggests. But here everyone *can* easily notice the sensation itself if he will. Usually we see a sheet of paper as uniformly white, although a part of it may be in shadow. But we can in an instant, if we please, notice the shadow as local colour. A man walking towards us does nót usually seem to alter his size ; but we can by setting our attention in a peculiar way, make him appear to do so. The whole education of the artist consists in his learning to see the presented signs as well as the represented things. No matter what the field of view *means*, he sees it also as it *feels*— that is, as a collection of patches of colour bounded by lines— the whole forming an optical diagram of whose intrinsic proportions one who is not an artist has hardly a conscious inkling. The ordinary man's attention passes *over* them to their import ; the artist's turns back and dwells *upon* them for their own sake. 'Don't draw the thing as it *is*, but as it *looks !*' is the endless advice of every teacher to his pupil ; forgetting that what it 'is' is what it would also 'look,' provided it were placed in what we have called the 'normal' situation for vision. In this situation the sensation as 'sign' and the sensation as 'object' coalesce into one, and there is no contrast between them.

But a great difficulty has been made of certain peculiar cases which we must now turn to consider. They are cases in which a present sensation, whose existence is supposed to be proved by its outward conditions being there, seems absolutely suppressed or changed by the image of the 'thing' it suggests.

This matter carries us back to what was said on p. 327. The passage there quoted from Helmholtz refers to these cases. He thinks they conclusively disprove the original and intrinsic spatiality of any of our retinal sensations ; for

if such a one, actually present, had an immanent and essential space-determination of its own, that might well be added to and over-laid or even momentarily eclipsed by suggestions of its signification, but how could it possibly be altered or completely *suppressed* thereby? Of actually present sensations, he says, being *suppressed* by suggestions of experience—

"We have not a single well-attested example. In all those illusions which are provoked by *sensations* in the absence of their usually exciting objects, the mistake never vanishes by the better understanding of the object really present, and by insight into the cause of deception. Phosphenes provoked by pressure on the eye-ball, by traction on the entrance of the optic nerve, after-images, &c., remain projected into their apparent place in the field of vision, just as the image projected from a mirror's surface continues to be seen *behind* the mirror, although we *know* that to all these appearances no outward reality corresponds. True enough, we can remove our attention, and keep it removed, from sensations that have no reference to the outer world, those, *e.g.*, of the weaker after-images, and of entoptic objects, &c. . . . But what would become of our perceptions at all if we had the power not only of ignoring, but of *transforming into their opposites*, any part of them that differed from that outward experience, the image of which, as that of a present reality, accompanies them in the mind" (*Physiol. Optik*, p. 817)?

And again: "On the analogy of all other experience, we should expect that the conquered feelings would persist to our perception, even if only in the shape of recognised illusions. But this is not the case. One does not see how the assumption of originally spatial sensations can explain our optical cognitions, when in the last resort those who believe in these very sensations find themselves obliged to assume that they are *overcome* by our better judgment, based on experience."

These words, coming from such a quarter, necessarily carry great weight. But the authority even of a Helmholtz ought not to shake one's critical composure. And the moment one abandons abstract generalities and comes to close quarters with the particulars, I think one easily sees that no such conclusions as those we have quoted follow from the latter.

Helmholtz's (and Wundt's) argument in brief is this, that since our spatial interpretation of certain optical sensations is altered by ideas or other sensations alongside of the former, this spatial interpretation could never have been an original element of the sensations as such, but must always have been what it proves itself now to be, an *inference, made unconsciously* from a number of premisses.

Profitably to conduct the somewhat tedious discussion, I must divide the instances into groups. But the room vouchsafed me in this number of MIND is already exhausted, and the discussion of the facts relied on by these authors had best form the opening section of my fourth and final article.

II.—ASSOCIATION AND THOUGHT.

By F. H. Bradley.

The intention of this paper is to show in outline how Thought comes to exist. Its method, I trust, is strictly psychological. It has to do solely with psychical occurrences and their laws. The facts immediately experienced within a single organism or soul,[1] and those facts regarded merely as events which happen, make the object of psychology.[2]

[1] Not *subject*, because at first there is no proper subject, nor Ego for the further reason that in abnormal states we may have more than one Ego, or none at all. If we do not define by the organism, as for some reasons is undesirable (I do not discuss this), we must use the word 'soul' or 'mind'. In psychology I should define the soul as "a totality of immediate experience, possessed of a certain temporal continuity of existence, and again of a certain identity in character". "Totality" is used to exclude partial states. "Experience" is not definable: it can only be indicated. "Immediate" negatives and excludes phenomena so far as their content is used beyond their existence: truth, *e.g.*, *as truth* is not merely psychical. The amount of continuity and ideal identity required to make a single soul is matter of opinion, and mainly, I should say, of arbitrary opinion. The above definition is of course open to metaphysical objections, as are the conceptions which *must* be used in all empirical science. The objections are therefore irrelevant. It would be as idle to urge that the soul (as above) is not a real thing, as to say the organism is not one real thing because its matter has changed. At any given time the soul *is* its phenomenal contents *plus* that past which is taken to belong to it.

[2] On the object of Psychology see an article by the Editor, Mind No. 29. Mr. Ward, Mind No. 45, pp. 46-67, in objecting to the above position, has invited me to define a psychical fact or event. A metaphysical definition I of course decline to give in an empirical science (*Principles of Logic*, pp. 315-18). A definition in psychology is for me a working definition. It is not expected to have more truth than is required for practice in its science; and if when pressed beyond it contradict itself, that is quite immaterial. With this understanding I will state what I mean by a psychical event, first giving an incomplete definition and then correcting it. A psychical fact must (1) be immediately experienced (see above). (2) It must have duration: what does not exist through a succession of moments is not a fact. (3) It must have quality: there must be sense in asking, Of what sort? quality being here taken to include the aspect of pleasure and pain, though usually it is convenient to separate quality from 'tone'. (4) A fact has intensity. (5) In reply to the possible objection that duration *has* not duration, &c., we must say, Any one of the above aspects *is* a fact, so far as it is a mere aspect of that which has all the rest. So far, I hope, the definition is not very obscure. But, further, (6) it is necessary to include relations, even where no one would say that they are immediately experienced. Is the reappearance of some traits of childhood in old age not a psychical fact? But are these relations of succession and identity imme-

The word Association has been used to express my agreement with the English school at its best. With it I am convinced that thought proper is a product, and that, starting from what is presented, and keeping wholly to that field and to the laws of its movements, our science can trace thought's probable generation. And if at any point we fail, then that point must be marked as 'at present unknown'. Nothing can warrant our importation of a faculty or faculties, or a subject and its functions, or an activity, or an energy, if we mean by these more than some law of phenomena, some way of happening among psychical events. Our sole remedy is to reconsider our data and their laws, and to refuse to bring shame upon our honest nakedness by scraps of physiology and rags of metaphysics. It is to mark my entire adhesion to this principle that I have used "Associa-

diately experienced either by the soul or by the observing psychologist? We see here the impotence of empirical science to justify its principles theoretically. We have to amend our definition of fact; and yet, if amended, it threatens to let in metaphysics. But we meet this practically by the proviso that the above relations are not facts, save and except so far as they exist between facts as previously defined. That, I hope, answers the purpose; and the definition will run: "A psychical fact is anything which is immediately experienced and has duration, quality, intensity; or is any one of these aspects, as a mere distinguishable aspect,—so far, that is, as one aspect is taken as belonging to something which possesses the other aspects also; or, again, is any relation existing between any facts as previously defined". If we leave individual states and go on to the general, and ask if laws are facts, that is, to some extent, I presume, a matter of taste. I should say that, to speak properly, they are not so, though it may be convenient to call them so. The laws, of course, are confined to the region of facts.

It must be, of course, understood that our science does not disregard *other* aspects of psychical states, *e.g.*, logical or ethical. But it looks at them merely with a view to deal with them as appearing in and as influencing the course of psychical events. And a reply to the objection that "an unanalysable element in every psychical event" is not itself an event (MIND No. 45, p. 66), seems hardly wanted when we know what we mean by an event. Obviously the whole life of a man is an event, is a piece of new duration, though no event to the man. And, apart from that, changes in the intensity of the element would, of course, be events; as would be also the changes in the relation of that element to others. Mr. Ward, I presume, has argued from some meaning which he attaches to fact and I do not. But my object is merely to find a plain way of barring metaphysics out of psychology, and I am far from asserting that another way cannot be found, though an "individualistic standpoint" is, I am sure, no solution. Unless this end is reached somehow, the amount of metaphysics to be introduced is limited merely by the inclination or the knowledge of the psychologist. I say advisedly that I do not know a single metaphysical question which can be ruled out of psychology on principle, if any single one is let in; and I would call upon every English psychologist to face this problem without reserve, and to come either to an understanding or at least to a clear issue.

tion," but I dissent from very much that has been joined to the word. The English school in my opinion has failed to show the origin of the higher phenomena, because in its starting-point it has been seriously mistaken. Both the elements and the laws, into which (like all science) it has analysed the given, have been formulated in such a way that successful advance from them seems not possible. And the main cause is to be found in that dogmatic Atomism, which (whatever it might be as a statement of first principles) had no right to interfere with an empirical science. But I will not repeat a criticism which elsewhere I felt bound to urge to the extreme, and perhaps urged too harshly. I would rather feel that, in helping (so far as I can help) to modify the starting-point and to make progress easier, I am endeavouring at least to work in the spirit of the best English tradition.

For more reasons than one I cannot pretend to offer here the satisfactory treatment of so large a subject. I shall attempt in the first place to mark out the ground by pointing to the main characteristic of Thought; I shall then try to show rapidly how this feature has arisen, from what foundation, and by what laws; and in the third place shall deal with some difficulties. I shall have everywhere to be so brief as to require the utmost indulgence of the reader, and will at once begin with the first of my tasks.

What is the chief characteristic of Thought? I shall make on this point a very short statement, and must be allowed to refer to my *Principles of Logic*. The main feature is objectivity, and this means a control proceeding from the object. That which suffers control is the entire psychical process, so far as it does not subserve the development of the object. Sensations, emotions, fancies, volitions, are suppressed or modified to suit this end. I may of course will to think, and to think this or that, but the way in which this or that shapes itself in thought is independent of my liking. To interfere would be to vitiate or wholly destroy. But now what is the object? That it is not mere sense-experience should be a common-place. Nor is it simply whatever is excluded from the self, because the self is also an object of thought. And to say it is that of which we are conscious, would throw no light, if we may be conscious where we do not (strictly) think. The object is any portion of the psychical process, so far as it bears and subserves a certain character. It must in the first place have a meaning, an ideal content which is distinct from its existence as a psychical occurrence. And further, this

content must preserve its identity. It must from beginning to end be a self-same whole which keeps together without any foreign assistance. We must be able to say that from the beginning it has been and still is merely itself, and is therefore in the end because of its beginning. This claim may be invalid, but it is involved in our beliefs as to what thought must be if it keeps its character. The standard is, in short, to include all the facts and to get them consistent, but to do this merely in an ideal form. The end in other words is individuality, which in the attempt to be perfect must try to be complete, because its autocracy is not possible if its empire is limited. I believe that what follows will make this more clear, and I have stated it that we may realise the task before us. This goal has to be reached by a natural development from the lowest beginnings of psychical life.

I have said that Association in its usual sense has failed to account for this development, and has failed at the end because wrong at the beginning. We have now to modify its principles and make them more effective; but I will first repeat how entirely I accept their main tendency. Psychology is concerned with nothing beyond presentation and its laws, with nothing but the process of given events and the modes of their happening. It is from these elements that we must explain the generation of all else, for at all events no *other* explanation is admitted within our science. I shall state lower down what I mean by presentation, and will now point out the changes to be made in our ordinary doctrine. First, the Atomism must go wholly. We must get rid of the idea that our mind is a train of perishing existences, that so long as they exist have separable being, and, so to speak, are coupled up by another sort of things which we call relations. If we turn to what is given this is not what we find, but rather a continuous mass of presentation in which the separation of a single element from all context is never observed, and where, if I may use the expression, no one ever saw a carriage, and still less a coupling, divided from its train. You may urge that your doctrine is the absolute truth in the light of metaphysics. That may be so, but in psychology, because it will not work, it must not be let in. And to the Associationist, as to the Herbartian, we must reply that in our science their metaphysics are irrelevant, and that in other respects we can accept wholly the principles of neither, because (as they are used) they do not seem to work successfully, and because without great inconsistencies they would not work at all.

Hence the Atomism must go wholly, and the "associative links" must be connexions of content, not conjunctions of existences; in other words, association marries only universals.[1] I of course do not mean that bare universals are psychical facts. These connexions in strictness are not facts at all, although at times it may be convenient to call them so. An actual fact works so or so because of such or such a connexion when its content has one of the features connected; and it is then a case or instance of the law. But the association by itself is the law by itself, and no actual event that can ever occur. Lower down I shall have to say more on what are called "dispositions," and must now advance rapidly. Atomism being rejected, the Law of Similarity goes with it. This of course expresses truth, but a truth which is derivative and a consequence from others. Its importance rests on the objection to sameness, but psychology (like other sciences) has a right to call phenomena identical so far as they have the same content. And if the sameness is a fiction, none the less it means to use it. We are therefore left with Contiguity, and it is necessary to restate this so as to make it depend always on identity of content, not of existence. "Every mental element when present tends to reinstate those elements with which it has been presented." The meaning of "tends" is that it does so unless prevented at the time, or unless something in the meantime has happened to prevent it, and that according to circumstances a greater or less force is required for prevention. The "element" means any distinguishable aspect of the 'what' as against the mere 'that'. And we must remember that these connexions, being independent of the 'this' of mere presentation, hold good everywhere, at all times, and with every context. This has most vital consequences. Psychology should of course not assert that its elements in truth and really do work in abstraction and apart from a presented context, and, if it is wise, it will remember that its separation of one part of the soul from the rest, or even again from the Universe at large, is made wholly on sufferance. But to anyone who brands this assumption as falsehood we must reply, 'If a fiction, it deals with the facts. Let psychology mind its own business.' Whether this altered law of Contiguity should keep its name, or have another such as Redintegration, depends on those who have

[1] I must refer the reader here to my *Principles of Logic*. I do not think I should be justified in occupying the pages of MIND with a reprint of my work.

earned the right to dispose of it. I shall use the term if they permit me.

We have so far reduced the laws of Association to a single principle, and so far I have been able to refer the reader to my *Principles of Logic*.[1] I must now proceed more slowly. Beside this improved law of Contiguity or Redintegration, there is a law of Blending or Coalescence or Fusion. Where different elements (or relations of elements) have any feature the same they may unite wholly or partially. The more wholly they unite the more their differences are destroyed, with a transfer of strength to the result. And where they unite partially, they may or may not bring before us a new relation. There is no doubt that these laws of Contiguity and Blending work so closely together, that in many cases we hardly know which we have to lay stress on; but I do not think that one can be reduced to the other. Unless we extend blending beyond *events* (to this point I shall return), it will not cause reproduction, since in that only one of the elements can be present, and what is absent cannot blend. And, on the other hand, though with blending we have usually reproduction, yet we also have effects which that will not explain. I must pause to illustrate this latter point. Take the cases first where strengthening is produced, where, *e.g.*, an idea makes intense a sensation. You may say that the sensation has its content enlarged by ideal recovery, and that doubtless is usual; but to say that it is necessary and that it explains the phenomenon seems quite untenable. In instances such as those where attention strengthens sensations in the extremities or elsewhere, I cannot *always* find an enlargement of content, and, if there is ideal recovery, I am sometimes at a loss to say *what* is reinstated. Take the cases again where distinctions are produced in a perception or idea.[2] I see a blur in the sky, and because I know it is a constellation, I then perceive that it is so. Again, I am thinking of an Englishman and then see a host of ants, which makes me think of an army of Englishmen. In the first case we may be told that it is all reproduction, and that the interstices are recovered by ideal contiguity. But, I answer, if the idea already was there when I did *not* perceive, will its further reinstatement

[1] Professor Bain in MIND No. 46 has criticised some points in the account I there gave. I am sorry that the amount of space here at my disposal compels me to say merely that my opinions have not been changed.

[2] I have got considerable assistance here from Fortlage, *System der Psychologie*, 1855. Cp. Volkmann, *Lehrbuch*, § 93.

effect the perception? Or, again, if the idea was not present, and there really has been an ideal reproduction (or, again, an external suggestion), does that by itself explain sufficiently my altered perception? We must remember that, having two objects apparently the same, after an idea has been suggested, we may go on to perceive the suggestion as a fact in one case and *not* in the other. This must point to a strengthening as distinct from a recovery. And when I thought of an army, if the idea of an Englishman was already there, it could hardly be recovered; and where through association it was brought in by the ants, yet how was it altered and turned into an army? Was it not by a transfer through blending following on the reinstatement? We must say then that fusion, the importance of which will appear in the sequel, is not a case of reproduction.

Can we go on to find a principle which underlies the two laws we have just set forth?[1] I think we can, though we must not say that these laws can be deduced directly from it. Every mental element (to use a metaphor) strives to make itself a whole or to lose itself in one, and it will not have its company assigned to it by mere conjunction in presentation. Each struggles to develop itself by the weapon of identity, which gives strength by coalescence and enlargement by recall. And this effort to succeed by association with like characters may bring loss of life to the single member. To speak more strictly, each element tends (that is, moves unless prevented) by means of fusion and redintegration to give itself a context through identity of content, and in the result which is so made the element may not survive in a distinguishable form. It is also a fact that the collision, which results in great part from this movement, causes pain and unrest; and I think we may see that the unrest cannot cease as long as the elements given are unable to form a whole possessed throughout of such a content that it suggests nothing out of harmony with anything else. The reader may dismiss this statement as mere "transcendentalism"; but until my error is shown me I shall believe that it is strict empirical psychology, a mere general statement of the way in which events do happen. We may call it, if we please, the law of Individuation, and we should find that thought and will are each one case of it, made distinct by the different fields in which particularisation is worked out. But we must remember that our law perhaps to some extent

[1] The process which Wundt calls *Assimilation* I take to be subordinate where it is not fictitious.

uses a scientific fiction. It is convenient to speak of the movement of each element, but we must not assert (or deny) that in reality the element can do or be anything—unless, indeed, we are prepared to make psychology a battle-field for metaphysicians.

We have so far seen that Association can be reduced to the struggle of each element towards an independent totality by means of sameness in content, and that this principle works by coalescence where the conditions are given, and, again, by redintegration made through the establishment of connexions superior to time. And if we like to call the movement an *ideal* process, this may distinguish it from what is by comparison *mechanical*, the basis upon which alone it exists and to which it has to suit itself. I must now point out this machinery, though I fear without completeness. There is first the incoming of fresh sensations, external and internal, partly new and in part the same. There is the disappearance of old ones, caused I will not here ask how. There is the limit to the amount of what can come to us at once, a limit varying but effective. We see here the conditions of another kind of struggle, a struggle for existence among actual facts, alongside of the former struggle through identity, but crossing it at times and blending with it inextricably. In this more mechanical conflict what favours individuals? We must mention first habit, aptitudes produced by repetition, or got by heredity, or again in some way not known. Elements suited to these are strengthened, and in some cases also enlarged, and so tend to dominate. Where these aptitudes depend on ideal connexions they are instances of association, but where or so far as there is no psychical revival this is not the case. I think that psychology must accept this fact as an ultimate, unless it will venture on Herbart's startling assumptions or deviate into physiology. Passing by this, we come next to mere natural strength of presentation. If we wish to get this *bare*, we must look for it in 'disparate' sensations, those which possess no *special* common character.[1] Strength will here amount simply to prevalence or domination. That which occupies more mental space than, or again totally or partially excludes, something else is said to have more force. And it has *bare* force when it prevails, not by virtue of aught else (such as

[1] All sensations, in my judgment, do possess some common character. This will hold good whether we do or do not accept the view that the special sense *continua* have been differentiated from one primitive *continuum*. See Horwicz, *Psych. Analysen*.

habit or pleasure), but in its own right and simply.[1] Turning now from these conditions to one not mechanical, though hardly ideal, we reach the influence of pleasure and pain. That these work seems certain (though of course not demonstrable), but the way in which they work is still matter of controversy and I shall pass it by, and for the same reason shall do no more than mention Contrast.

But there is one point which, before we go on, I must notice—the nature of "traces" or "residues" or "dispositions". Associations are set up, and we say that these exist, but how can that be? Do the elements continue as psychical facts, and if not, do their relations remain somehow apart from them? Or what is the real nature of a general tendency? This is a problem which, in my judgment, falls outside psychology. To ask what a law is belongs to metaphysics, and such a question elsewhere can bring nothing but mischief. There are, so far as I know, four courses we may take, three bad and one good. We may follow the line laid down by Herbart, and force out an explanation by audacious assumptions and complicated fictions. And then we know where we are; as we may think we do, again, when we deny that a disposition is really psychical, and leave psychology for a region which I assuredly would not venture to call physiology. We clearly do not know where we are when we take a very common third course, and use phrases which may mean anything, to hide the fact that there is nothing distinct that we mean. But there is only one scientific course, to say plainly that what a disposition really may be, we neither know nor care. We have in science to do solely with events and their laws, events not being laws, and laws not being events, and we mean by a disposition that, because something has happened, therefore something will happen, *suppose that* something else happens and nothing interferes. And for this reason we cannot talk (except by a licence) of the blending of one disposition with others or with presentations. If no element is there in existing fact, blending has no proper meaning.

[1] When we get sensations possessed of a special community we can say of the stronger, It is the less *plus* some more. On the vexed question of 'units' I can say nothing here. The feature of domination in consciousness, or superiority general or special, becomes, of course, an idea, and we can so get the idea of without the reality of strength. The reader will see that I dissent partly from Lotze's view as to strength (*Mikrokosmus*, i. 229, *Metaph.*, § 262). The whole question is very difficult, and would require a long discussion. The reader should consult Mr. Ward's remarks (*Encyc. Brit.*, xx. 58), which, however, good as they are, still leave much to be desired.

We have now glanced at the field in which our improved Association has to develop the various faculties of the mind, and we have seen the motive powers used by the various combatants, and the heterogeneous conditions of victory. We have seen the cause of that disorder which at every moment can be found in the most regulated minds. We have now shortly to describe the beginnings of soul-life, and to exhibit roughly the means by which Thought in the proper sense comes to exist.

To give a picture of the earliest psychical condition, whether in man or the lower animals, is not my intention. Nor is this necessary for my purpose, which is to show merely in outline those steps which connect the origin and the end. The nature of the earliest stage of soul-life must be largely conjectural. It is likely that in some points our knowledge will be much increased; but we shall always be left with certain given limits within which we must construct a sketch that is probable but which we cannot quite verify. What we can be sure of is that any theory which begins with a derivative function, such as choice or memory, cannot possibly be true. The short account I am to give avoids, I hope, such sheer barbarisms. It is, I trust, at least psychologically possible.[1]

In the beginning there is nothing beyond what is presented, what is and is felt, or is rather felt simply. There is no memory or imagination or hope or fear or thought or will, and no perception of difference or likeness. There are in short no relations and no feelings, only feeling. It is all one blur with differences, that work and that are felt, but are not discriminated. Hence to the question, Is this life discrete or continuous, our answer is ready. It can not (for the soul) be discrete, because that implies distinction. There is not only no good evidence in favour of discreteness, but there is this argument against it. Suppose that for an outside observer sensations, as a series or as a collection of series, happened in the mind, yet, for that mind at the outset, the separation and succession would not as such exist. If the whole were not unbroken it would at least so be given to a feeble mind, because the machinery required for the perception of succession, and of relations in general between sensations, is not yet at work and could not be at work. And, if I am told that this perception is entirely

[1] I must be allowed to refer once more to my *Principles of Logic*. Mr. Ward's excellent article (cited above) will be found in many points to support the view I have adopted.

simple and wants no machinery, I am afraid I must pass on, until my objector shows at least that he is not barbarous but has some acquaintance with the question at issue. There are then no several sensations for the early mind, and, whatever efficacy we may assign to relation and to change (a point which I omit), there is no change and no relation which comes as such to that mind. For itself it is not discrete, and hence also it is not explicitly continuous.

If now, turning from this point, we ask *what* is presented, that inquiry may have a good many senses. Do special sensations exist, and, if so, in what sense and how many? How do quantity and quality stand one to the other, and can we say that either, as such and specifically, makes itself felt? I intend to pass by these questions, and glance rather at the doubt as to pleasure and pain. Do these exist from the first, or must we say they come later? I do not know any way of deciding this problem. In the first place I am not sure if sensations are *now* ever entirely indifferent—if, that is, they are ever more than relatively neutral; and, if so, whether they are neutral as being wholly bare, or as having in them a resultant both of pleasure and pain. Again, if we suppose that some sensations are to us now indifferent, either in normal or again in pathological conditions, can we go from that to the conclusion that it ever was so when the mind was a simpler whole? Is there in short any good argument for the absence (partial or total) of pleasure and pain (or one of them) from the earliest soul-life? If I had that knowledge about pleasure and pain which some psychologists possess, I might perhaps settle these questions, but, as it is, I must conclude that it is safer *not* to suppose that at first pleasure and pain may be absent from sensation, or for the mind are attached to parts of the whole; and so I shall assume their presence. How then will these two sides stand to one another? In the first place a pleasure or a pain is not anything by itself. It is always something painful or pleasant, and that something is sensation (or sensations).[1] And in reply to the possible objection that pleasure and pain are not given at all, I must point to the facts. If we take "given" or "presented," not as

[1] This is the place to take up the question of reproduction by pleasure and pain. Are they exceptions to the law that *all* elements move towards redintegration? In the first place, though I cannot show that they do act merely as pleasure or pain (because I do not know how to make the abstraction required), yet, on the other hand, I do not see how to deny that a mere difference in bare pleasure (supposing that to happen) might make the essence of revival as against no revival. It seems probable that pleasure in

implying a donation or even a relation to an Ego, but rather for that which is simply, and comes as it is, then in this sense pain and pleasure must be called presentations.

But the objection leads on to a further discussion. Is there anything at the start beyond mere presentation, that is feeling with the distinctions of quality, quantity and 'tone,' which *we* abstract from one another, but which at first come within one blurred whole which merely *is?* I feel convinced that there is nothing. I do not think, in the first place, that there is at the start any aspect of *self-feeling* (*Principles*, p. 456). True, the whole that is given, however poor that may be, does expand and contract, and feels pleasure and pain; but to *be* a felt expansion, and to feel it as such, are not the same thing. Until a core has grown together, against which the alteration can come as an 'other,' I cannot see how the aspect of self is possible. And I find no reason to suppose that at the beginning this internal group does, even in a rudimentary shape, exist. If the early soul is rich enough to afford this variety, yet the distinction is not a thing which requires no making, or can make itself at once and without machinery. Hence there is at first no self-feeling, even though we mean by that merely one aspect of the whole; and still less is there anything like a subject and object. I observe much confusion on this head. The distinction, we may hear, is not to be transcended. Now, if this is meant metaphysically, it is utterly irrelevant. Whether really and in the end all the contents of the Universe, my self included, are or are not relative to some subject, is a question on which psychology has nothing, and cannot have anything, to say; while to stop short of this question is to make no advance at all. But, remaining within psychology, I remark, in the first place, that in verifiable experience we occasionally have states where this relation of subject and object wholly ceases to exist. Still this is not the main point. For where experience does give us a reference to self, that self is not naked form. It has always a content, a concrete filling that varies but never is absent. Now, I would urge, if this reference exists at the start, what is the content of the subject? Is it likely that experience, at its poor and blurred beginning, does divide

general may as such have associations, and still more probable that pleasures in their union with qualities may have special associations, and may recall where the qualities alone would not recall. And the evidence seems in favour of pleasure and pain being recalled by qualities sometimes and not being *always* recreated. That being so, I feel bound to include them under the law.

itself into two parts with a relation between them; and, if so, what fills each part, and what machinery can at once effect this distinction? Until these questions are fairly met, the introduction of a subject into the early mind is not merely perhaps false, but is not scientific. The mere form of a subject could do nothing, and indeed for psychology is nothing; while to give the Ego a concrete super-sensible character would hardly serve better. For if this character comes into given experience, then it becomes mere presentation that is mixed with the rest; and if it somehow stays outside and touches only, so to speak, with the end of a relation the presented datum, then it falls outside empirical psychology. And with respect to Attention, or Apperception, or Activity, I have said something before (MIND No. 43) which I will not repeat. I should be loath to criticise the doctrine as, for instance, it has appeared in the writings of Wundt; and, maintained as it is by Mr. Sully and, to a still wider extent, by Mr. Ward, it has become to me no clearer. Not only to my mind does it fail in part to be intelligible, but I find no adequate information as to the basis on which I am to suppose that it rests. The main point, I think, is this: if attention is not an event or a law of events, has it a right to exist in empirical science? Is it not simply a revival of the doctrine of faculties? And I am afraid to go on until I have pointed out the vice of admitting faculties. It is not merely their number which makes them objectionable, and it is a very serious mistake so to look at the matter. The principle is the same with one as with a hundred. In its worst form the faculty is a something outside that interferes by a miracle with the course of phenomena. I need not say that in this sense it is embraced by neither Mr. Sully nor Mr. Ward, for with both of them Attention has a law of its working. In its more harmless form the faculty acts by a law, but the objection to it is that in this case it is idle. If it is merely an expression for a way in which things do occur, or it is used further to mark a condition of their happening which is not yet known—then at its best it is a bad way of stating a law. And it seldom stays at its best. It becomes a phrase offered in explanation of phenomena beyond that field from which it has been drawn, which phenomena the mere law would at once be seen *not* to explain. I feel no doubt that Wundt has used his Apperception in this way, and little less that Mr Ward has partly followed the same line, and that Mr. Sully is at least somewhere on the brink of doing so (cp. MIND No. 40, p. 490). And I have thought it right to speak plainly because, if I am wrong,

that may lead to the explanation of a doctrine which assuredly needs one, and which, from the character of its advocates, cannot be ignored.[1]

We have so far concluded that in the beginning there is neither a subject nor an object, nor an activity, nor a faculty of any kind whatever. There is nothing beyond presentation which has two sides, sensation and pleasure and pain. And for the mind there is no discretion, or even discrimination. All is feeling in the sense, not of pleasure and pain, but of a whole given without relations, and given *therefore* as one with its own pain and pleasure. So far as it is possible to experience this after contrast has done its work, we do so most of all in organic sensation. From this basis, the machinery we went through above has to bring out subject and object, volition and thought.

I am entering ground that should now be more familiar, and shall hence advance very rapidly. The first point we have to notice is the formation of groups. The condition of this is that in the flux of sensations there should be regularities. Without some identity in the given our experience could not start, and no Ego or faculty could give us any help. These groups will consist mainly of the sensations

[1] The appearance of Mr. Ward's article in MIND No. 45 since this was written, has not led me to modify it; but I will add a few words. Mr. Ward appears to me hardly sufficiently alive to the necessity of defining a term like "activity". If "activity" were wholly simple, then, of course, it could not be defined, but only pointed out. The question is, however, first, whether such a simple element does exist, and next, whether, if so, it answers to what we call activity. But Mr. Ward, I gather (MIND No. 45, p. 66), considers that activity contains a relation. If so, I would invite him to say more explicitly whether the terms of the relation are psychical facts, in the sense of being immediately experienced, and having quality, duration and intensity—or, if not that, what else they are. If Mr. Ward will do this, he will, I think, be convinced that the question is about more than words. I may be allowed to add that the question is hardly so much about the reality of activity as about its nature; and that my contention is hardly (as suggested on p. 66) that, *because* our perception of activity is composite now, *therefore* in attention there cannot be an unanalysable element. Activity has, it seems to me, a complex meaning now, and I have tried to show the psychical development of this complexity. Let that derivation be false and my contention is still this—Activity in its general use seems to have *some* meaning, and the man who uses it in psychology is bound first to say with what meaning he uses it. If he makes it an original constituent he is none the less called upon to state its content; or if he holds that it admits of no more than bare pointing out, he is bound to state this explicitly. And, in the second place, he should say *why* he applies to this unanalysable element the term Activity rather than any other word. Meanwhile I feel called upon to repeat that in general the present way of treating this word is little better than a scandal.

conjoined by reflex action on the environment; but of course the salient connexions in those points of the environment, which have thus become emphasised by pleasure and pain, will enter into the groups. The way in which these unions come to be made may, I think, be assumed, and what I wish to urge is that at first they are neither subjective nor objective, nor have aspects distinguished. They are felt wholes in which the features all run together. The next point is the formation within these groups of features accidental and essential. I, of course, do not mean that they are known in that character. What I mean is that connexions have degrees of strength. When in the struggle of the elements repetition of the pleasant has sometimes led to pain, when the object and the movement (sensations A and B) have had one sequel CD and another EF, then what has been uniform coheres and defies competition, as the variable and occasional hardly can do. We have therefore some groups weak throughout, and within every group we get aspects connected strongly, while others are attached feebly. This point is of importance.

If we leave these formal considerations and look at the content of our groups, we find a striking difference. There is one of our groups, or one set of features in our various groups, which bears a special character. In the first place it is always (more or less of it) there; in the next place it is connected with pain and with pleasure as no other group is. It is thus permanent, essential and emphatic, against the variable and that which in comparison is accidental. First, what are its contents? The core of them is formed by that bundle of feelings which always is given, and which later we know as internal sensations. And (to anticipate) round this core, and identified with it, comes the whole body-group of sensations. This (still to anticipate) becomes the representative of the group we call self. And (anticipating further) let us ask what distinguishes the body from foreign objects. It is this mainly, that any alteration whatever of my body (whether regarded as antecedent to or as sequent on other events) is connected with pain and pleasure. It is not, I should say, strictly true that any change of my body-group must be felt as painful or pleasant. What is true is that the exceptions are too weak to affect the force of the association. And further, the changes of the body-group bring pain or pleasure *immediately*. It is not so with other groups. These are painful or pleasant when in certain relations, and in others their character is turned to the opposite, or fails altogether. Hence the pain or the pleasure

becomes something not essential. Fire burns, warms and does neither; an approaching body hurts or pleases, or again is indifferent. These other groups are not yet distinguished from the feeling they cause in me (this comes later); they are still one whole with my enjoyment or my suffering from them. But in comparison with the body-group their connexion is weakened. Because indirect and inconstant, it has failed to dominate. The body-group, upon the other hand, has grown together with that core of internal sensation which has been indifferent, either never or too seldom to affect the strength of the connexion.[1]

Returning now from our digression we may have brought back some light. The foundation of the group which grows into the self is, and remains, those sensations which continue to be feeling in the sense of being one with pleasure and pain.[2] The real question is by what steps and in what degree and to what extent other groups are dissociated from this feeling-mass and qualify it by their contrast, and, on the other hand, what features are in various degrees connected with it. We have seen the way of dissociation. It lies in those repeated variations which by collision must loosen the feeling-aspects of some groups. On the other hand, we perceived how the direct and unceasing conjunction of the body-group with pleasure and pain made it inseparable

[1] In order to simplify, I have dwelt solely on pleasure and pain, because I think this the main point. If we may suppose them absent, I do not deny that a distinction of subject and object would be developed, but it would hardly be the same as that given now in experience. A complete account of the growth of our knowledge of our bodies would have, of course, to consider other points. The alteration of outer objects is not regularly a cause of further sensations (other than pleasure and pain), while the change of the body is so. This is illustrated further by double sensation, when two parts of the body touch. Again (at a much later date), change of the body is found a condition of the perception of fresh phenomena. From another side the body is controlled directly and regularly by the feelings and thoughts; and outer objects, if at all, indirectly. I cannot pretend to deal here with the question fully and systematically. The problem of localisation I omit wholly, and, as to the perception of the extended in general, all I can say is that I do not think it essential to the distinction of self from other objects, though now it colours all relations. As to its originality, I think that clearly in its origin it could not have borne the *relational* character it now has, and could have been neither discrete nor (properly) continuous. But all the attempts which I have seen made to derive extension from what is quite non-extended in my opinion break down. The problem is unfortunately mixed up with metaphysical preconceptions, both as to the discrete nature of the elements, and again as to the intensive, not to say simple, character of the soul. On the subject of discrimination and the perception of relations, I shall be able to say something when we deal with voluntary Analysis.

[2] This is the main key to pathological states of the Ego.

from that aspect and one with its core of internal sensations. But at this point we must be cautious, or we shall fall into an error which is far too common. The feeling-mass is in the first place *not confined to the body-group*. It will contain more or less of *whatever in the environment has not been dissociated from itself*. The sensations from our surroundings, inclusive of other animates, are, certainly at first, and probably afterwards, more or less inseparable from our self-group. This is a conclusion which follows from our principles theoretically, and in practice certain facts are inexplicable without it. Nor is there anything to urge against it but the metaphysical prejudice of individualism. And, in the second place, the outlines of this group are not fixed, and they never become fixed. If I ask what is myself, what are in general those habits, those ways of feeling, thinking and acting, which make me what I am, the answer would vary with years. And it would vary in particular as from moment to moment the self contracts or expands with failure or satisfaction, and suffers from or possesses itself of the external; and at its limits I should not know what was part of me and what foreign. So that in putting forward the body-group as identified with, and representative of, the group one with feeling, we must remember that the body, neither at last *nor at first*, includes all the self; and that at its limits, and again later through nearly all its extent, the body becomes dissociable from self.

We have so far reached the stage where in the one mass of feeling (the unbroken whole of sensation and pleasure) groups are more or less connected, and where the greater part of these groups have been dissociated more or less from the feeling-nucleus, the core specially connected with pains and pleasures. We are still below the point at which consciousness[1] with its subject and object has appeared. This is fully reached first when a relation is perceived between the group identified with feeling and some features not identified. But this perception is led up to by a long course of hardening among cohesions and of collisions in the felt between the discrepancies. And, when consciousness is reached, it is not constantly maintained. It must

[1] I think, on the whole, that this is the best sense to give the word. But we cannot get rid of another in which 'to be conscious' means 'to notice,' and 'the unconscious' is that of which we are not aware. We may obviously be 'unconscious' of sensations which, for all that, make part of the object-group. Again, we must remember that in those states where the subject and object disappear, almost if not altogether, features of the object may sink back wholly into the stage of mere feeling.

come spasmodically and at intervals, with lapses between them, before it grows into a normal attitude of mind. The perception of the relation as such I will deal with lower down, when I touch upon discrimination in general. But what calls it forth is the practical collision between the feeling and a non-feeling group. After experienced satisfaction the object is approached with an expansion and excitement caused by ideal suggestion. If it resists and causes pain, there is a violent collision between the sensations, due (directly and through movement) to redintegration, and the discrepant outer group. And when both persist, the alternate expansion and driving in, of first one group and then the other, with the strong pleasures and pains which mark the struggle, tears in half,[1] so to speak, the mere unity of feeling which formed the battle-ground. What we have called the feeling-core has had to identify itself at once with its own contraction and expansion in regard to the outer group, and the task is impossible. Before experience and association had brought up and fixed expansion on the presence of the object, the task did not exist, because the self was driven in and there was an end of it. Now it *must* go at once two ways which are divergent, and from this effort supervenes, not the cessation of the struggle, but the first perception of it. I do not mean that consciousness could have been predicted as a result apart from specific experience. I mean that, feeling sure it has emerged, we can to some extent see how that emergence must have happened. We can feel the problem that pressed hard upon the struggling mind and understand how the result has partly solved it.[2]

I will, in passing, glance here at the origin of our ideas of activity and resistance; and as the latter at all events implies the former, I will keep to activity. The general idea, I presume, is that of an alteration of A not taken as belonging to anything outside, but as a change of something beyond A which realises something which in A was ideal. This may be quite indefensible, but it is, I think, what we mean

[1] It does not, of course, really tear it, or we should get two selves indifferent to each other.

[2] I do not intend to consider here the influence of society and the collision with other selves, nor to date the origin of that perception. The discrepancy of the symptoms of pain and pleasure in another body with the feelings in mine no doubt operates strongly as soon as it does operate. It is, however, possible to exaggerate the importance of the social environment. To say, Without other selves no self *at all*, is surely going too far. It would be, perhaps, as true to say, If other selves did not exist, we should certainly invent them. But it is not necessary, and I think not permissible, in psychology to make either assertion.

generally when we use "activity". And when we come to the soul and the perception of our own activity, it is perhaps going too far to say that without an idea of the change no rudimentary form of that perception would come.[1] But in seeking for the minimum that must be apprehended, we cannot postulate less than a concrete and limited self-group, and a following alteration of this as against its limit. Further, the origin of this change is not to be referred to an other, nor do I think the mere absence of such a reference would be enough. The origin, as well as the process and result, must be felt to belong to the self-group, and for this the change must ensue, not only from the permanent character, but also from a present occasional feature. Now I do not deny the theoretical possibility of an ultimate state of mind holding all these constituents and so yielding the idea of activity on reflection. What I deny is the presence of one shred of evidence for the existence of such a state. That 'motor' feelings of any kind should supply such a complex seems to me quite preposterous. And what I cannot understand is how, without some apprehension of a concrete self with limits, and its change in time as arising from itself, anything like activity can exist *for the soul*.[2] And with all due respect for those who hold to (and some of whom build I know not what upon) the ultimate character of activity or resistance, I am left to conjecture that either they attach no definite meaning to these terms, or else some meaning which is foreign to them, or else that they have never made any serious attempt to analyse that which they set down as irreducible.

We have reached the knowledge of an object other than my self and in relation with it. We have to advance to the idea of something real by itself and independent of its connexion with my feeling-centre. We may deal with this briefly. The object recurs often, and, in itself and in its environment, is mainly the same, hence it seems permanent and identical. But, on the other hand, it is variable; and of its features some depend upon foreign relations, while

[1] The account of this matter (MIND No. 43, pp. 316 ff.), to which I must refer, should be so far modified. Further, I did not mean to convey that I myself took *desire* to be essential. My own view is opposite to this. I must excuse myself from entering further into Mr. Ward's criticisms (MIND No. 45), on the ground that they seem based upon misunderstandings which a comparison with the present article may remove.

[2] The soul may of course have been "active" long before *for the outside observer*. So used the phrase is harmless so long as it is felt to be unnecessary, and is merely *used*. Cp. MIND No. 43, p. 317.

others, because more constant, are not seen to be relative. And the relative part, because discrepant, belongs not to the thing; the thing (what is left of it) exists out of relation. The result of this advance is, of course, inconsistent, and raises problems which psychology has not to take up. There is no need to exhibit its progress in detail. There are emotive attributes which the object palpably has and has not. A sword hurts when it cuts me, but, when it cuts something else, it may give pleasure or nothing. What then has it got, and what does it give? Further, when at rest it certainly does not cut, and yet we call it cutting. Again, not only do things vary, but they vary and persist in spite of my pleasure and action, and, at least to some extent, are not changeable by me. To that extent then, up to which my changes do not alter them, they are real altogether apart from my existence. And, where language comes in, because for others as for me, and again because in some points *not* for others as for me, the object becomes partially free from us all. What is discrepant collides and sets at liberty the remainder which has not come into collision.

It is now easy to advance to the distinction between things and my thoughts about them. Disappointment reflected on brings knowledge of error, and language, of course, co-operates largely. Desire and expectation have to yield to the thing. They cannot alter it, and it decides whether they succeed or not. Whatever they may be, and whether they exist or do not exist, and when one man thinks this and another man that, the object is, and becomes, what depends on itself. If our expectations then are not to fail they must depend upon things—things not merely now and here, but in the distance and in the future. And the fact, more or less invisible, controlling our thoughts which without it are failure, has now been developed. This is the theoretical object, though the interest we take in it is still mainly practical.

But in thinking, it may be said, I am aware that I act; I *make* an alteration, and this is a difficulty. And for metaphysics, without doubt, a grave problem arises; but not for psychology. Objects are found to possess qualities regularly though not always; take for instance colours. Hence an object may be changed, though not in itself, and therefore only for us. Again, the thing for me is altered when I change my position, turn my head, close my eyes, or cease to touch with my hands. But it comes again as before, and changes regularly on my movement. Still, my movement did not change it because I find it as before. It could not change it, because in the interval the thing acts as it would act if its qualities were there. And for others again, inde-

pendent of my movement, the changes take place, and are no change for me. Hence these movements do not alter the fact but ourselves. It is the same with the invisible object of thought. That develops on my action, but I do not control it, as baffled expectation at once makes manifest. And so here, as before, there are actions about the thing which change only me. As the light shows us colours or darkness conceals them, while the colours in themselves remain what they are, so thought gives us, like true light, the nature of reality, or like twilight and mist presents us with appearance, or like darkness with ignorance. But the object is what it is, and, so far only as in action we suffer its control, does our thought remain true. As to the nature of the control our early reflection has nothing to say.

We have seen how thought is objective, but we have not yet reached the goal which, at the beginning, we set up. The object was not that which excluded my self, for we saw that my self is also an object, and we have to find how it becomes one. It is easy to see the way in which my body, first in some aspects and at some times and then altogether, can be distinguished from my self. And it is an object which obviously we are interested in knowing. So, too, my internal states, and my self, as the thing which possesses these qualities, come naturally to be thought of. The one process, that combines and sunders through individuation amid discrepancies, goes on working to the end. The feeling-core with its early and its acquired constituents is a hard thing to reach, but the interest is unceasing. If this and that cannot really be the thing itself which feels, what in the end can it be?

Thought has an object and subject, but these are not fixed compartments or parts in the self. Any process, as we saw, which preserves identity of ideal content is thought and is objective. But why an *object*, we may insist, since this means *not* subjective? It is an object, we reply, because it is distinct from and regulates other psychical movements, and these by contrast are subjective. Even in the highest self-consciousness where my self is the object, the distinction persists. It is not possible to have a state where, beyond the content of the object, there are not psychical elements which exist and interfere and need constant control. Pure self-consciousness as a state where perceived and perceiver are psychologically at one, and where existence no longer jars and struggles with content, is no actual condition. There is always something to control, and in this sense thought remains for ever objective.

But, we shall be reminded, not only does thought exercise control, but it does so consciously. It has an end and a standard, and this calls for explanation. We may ask first how thought comes at all to be critical or 'normative'; next, in what the standard consists; and in the third place, *why* it is thus and not otherwise. (*a*) Since control by the object is found satisfactory, the idea of that control of course interests and moves, whether always as the object of desire I will not ask; and the character of this control of course comes to be generalised, and so moves in a more and more abstract form. (*b*) What in the end is this character, can not be discussed here at length. We found it to consist in identity or individuality of content. (*c*) Why it is thus and not otherwise, is a difficult question. We can see at once that, if the object is either changed for another or taken incompletely, there will be practical failure. And the mind, it will be urged, has simply followed this line of most pleasure and least pain, and its experience has cohered and is perceived as an axiom. On this I wish to say first that an axiom or a postulate, or a criterion in general, if we regard its *validity*, falls outside psychology. For that science it is merely a general character which moves, which brings rest when successful and unrest when defeated. We are confined simply to the origin and nature of an axiom as it comes into the course of psychical events. Now, if this standard has been produced merely by what has happened to succeed, it seems strange that its principle should be precisely what operates at the start and in the earliest association. Is that only a coincidence? Or shall we suppose that the type of our first rudest movement has also somehow resulted from natural selection? Perhaps so, but I would remark that, unless we will be resolute and make the nature of things result from a struggle and a survival among bare possibilities, then an account of this sort cannot go back for ever; and psychology, I should have thought, has to make its start from *psychical* ultimates. We must begin then without anything like mental association, and try to show (I suppose) how its laws have been made by conjunctions of presentations, which gave pleasure and pain (or at any rate succeeded or failed) and somehow led to these laws. I cannot here criticise such a doctrine, and will say only in passing that if it understands itself it will make psychology an appendix to physiology. I am contented with the view that for psychology the law of individuation is an ultimate, and that this law has succeeded, because it answers to external events in a way which to psychology is itself once more an ultimate, and that, thus succeeding, it becomes an end and a standard for thought

and feeling and will, according to the special conditions of these processes.

If we ask further as to its connexion with pleasure and pain, and raise the doubt whether our 'norm' satisfies directly and in its own right, or has now got pleasure conjoined with it because circumstances connect pleasure with success, and *it* has somehow happened to succeed, I cannot here answer fully. But I see no reason to doubt that the realisation of our principle is pleasant directly, just as much as when our self succeeds against the environment. And I think an inquiry into the conditions of pleasure would show that in the main those results please which are the same in character with the result of our principle. It will be the feeling in both cases of one self-realisation diversely produced.[1] To ask a question beyond this would be to enter metaphysics.

We have now pointed to the essential feature of thought; we have seen the machinery which works in all psychical processes; and we have hurriedly shown how from a basis of mere feeling this machinery develops the function of thought with its subject and object. And, did space permit, we could easily complete and verify our explanation by exhibiting volition and emotion, in their contrast to thought, as other developments by the same machinery from one single foundation. But there are theoretical activities which have not been explained, and I must endeavour in what remains to indicate how these confirm our previous account.

There is a difficulty which kept me for some time at a stand. Thought is certainly a function of analysis and synthesis, and the synthesis is plainly an application and development of Contiguity. But what is the origin of analysis? True (as I have pointed out in my *Principles of Logic*) the synthesis must analyse, since the competition of different redintegrations forces elements apart while holding them together. But take a case where I set myself down to discriminate, where I say to myself, I will investigate this object or analyse this sensation. We can indeed see how synthesis largely assists us, but in the end there will be something which can not so be explained. And the true explanation is that the idea of discrimination works further by blending. I will exhibit this briefly, beginning first with

[1] The conditions of pleasure can, I think, be reduced to harmony (including pureness) and expansion, answering to consistency and completeness in knowledge. But whether, as in knowledge, the two will fall under one head is not a simple question, and I shall reserve my opinion for another opportunity.

the involuntary perception of difference, and then dealing with analysis.

As I have remarked above, discrimination is in one sense inexplicable. We are unable to make the transition from the fused to the relational condition of mind, in such a way as either to see *how* this particular result did come, or to feel simply that it must be so and that no further explanation is required. But the result is explicable in this sense that we can retrace the collision which goes before it, and see how it contains the warring elements in solution. There are two thoughtless extremes against which we must guard. In the first, sensations are different, and that is distinction. In the second, distinction supervenes, and that somehow makes difference. Each has one side of the truth that (explicit) difference implies distinction, and distinction rests on (undiscriminated) differences. The first error forgets that my sensations may be different and I not know it: while the second does not reflect that the very best faculty wants some machinery; and that, if without due cause it wildly throws out relations, then it explodes at haphazard and its missiles stick by pure chance.

If we had discrete presentations in series or together, that would not give even the faintest beginning of distinction. If there is to be a change, it, I hope, begins to be a truism that something must change, and, if so, *therefore* must endure. If we are to feel change, then in feeling some element must be continuous. It is of no use to bring in the Ego, for the mind in general can do nothing in particular or at all. If the identity is to work it must be determinate and special; but this offers no difficulty. Our presented whole from X(*abc*) becomes X(*abd*), and gives identity with diversity. How will this go on to work? For mere shock and collision, we must remember, may shatter wildly the contents of our mind and cause pain and unrest; but to have collision in one's mind, and to feel it as such, are hardly the same. Mere invaders that seized on us and dropped us in turn, that fought furiously in our precincts and well-nigh pulled us asunder, would be nothing to the purpose. We feel the struggle that we make, and by *we* I mean simply our presentations. The collision is made when, with X(*abc*) – X(*abd*), the persisting X(*ab*) has two differences, *c* and *d*, either of which it can restore by Contiguity[1] against the

[1] Where there is an after-sensation the mind has a little less to do. But to take the existence of an after-sensation as being by itself a solution is, of course, quite thoughtless. Not what it is, but what it does, is the point to consider, and, if it acts, it acts by ideal redintegration on the basis of partial blending.

presence of the other. Itself therefore, when one of these elements is banished, reacts, and bringing in the other produces a collision located in one point by a basis of identity. Again, if the two groups are there together, their identities, $X(ab)^1$, $X(ab)^2$, blend, and so force c and d to struggle for existence. It is this conflict of the soul against itself which begins to be felt as difference.

The very lowest perception of change implies a basis of identity, with incompatible differences in and through which that struggles against itself, and so gets for a moment the feeling of relation. The same process, developing itself under special conditions, results in the perception of various relations in which the two elements in their connexion come to consciousness at once. These special relations present us with a number of difficulties, made more difficult by the fact that our space-perception now qualifies and overlays the whole field. I can but emphasise in passing the essential point. There are *no* qualities which in themselves are incompatible. They may be naturally incompatible in the sense that our machinery is not able to present us with both of them together, under some conditions or at all.[1] They are *all* again ideally incompatible, if we try simply to identify them (without blending); and *all*, on the other hand, reconcilable, if we distantly couple them by means of relations. They are not really reconciled because the differences are all there, and the relations are not a harmony of these opposites, though they enable us to get round and to ignore the collision of unity and diversity. And if thought is a faculty of relations, it is thus for ever condemned to inconsistency and makeshift. But what I would emphasise is this, that the one law of Individuation brings on the conflict, and then (practically though not theoretically) disposes of the problem by means of a relation. This is why 'contraries' are most hostile, because the more special the identity the severer the struggle, if that struggle arises. But these forms of relation, which make experience what it is, are not (so far as I see) to be deduced from first principles. We are unable to reconstruct their specialities, though the necessity for them and their main character may be understood. And what we find everywhere, when elements are held apart and in relation, is a basis of identity which ideally connects them—even though that basis be not special and now appear to us no more than their co-presentment as members of one total given state of the feeling-centre.

[1] I cannot enter here on the difficult question as to the part played by quality as distinct from quantity. The view that in *all* presentations there is a common basis admitting of degrees would have considerable bearing here.

In discrimination we get a result of variety in unity, and when we go about to distinguish or purposely analyse, what happens is this. The result of distinction becomes an idea,[1] and, when we will, we have that idea over against a presentation. I have an object A and the idea of variety, the latter present now as the idea of a variety in A, call it A(*bc*). And this variety may be general, we may want to make any distinction that we can, or it may be more or less special, call it A*y*(*bc*). Now how will this idea work? It will work first of all obviously by means of Contiguity. Striving to particularise itself the idea of itself accomplished will restore anything connected with that accomplishment. This is the way in which contiguity is known to find means for an end, and there is no need to dwell on it. The idea of A somewhere exhibiting variety leads to restless movement about the whole field of it; the idea of its showing this or that variety leads to particular search, as when a beast surveys a region for its prey or its enemy. And so far the idea of distinction working by contiguity explains analysis.

But there is another side which we noticed when above we spoke of blending, and which this latter process alone, I think, will make clear. When I scrutinise the object of sense or of thought, I find that, on my attention and the presence of my idea, its features grow diverse. It is as if, so to speak, my will had served as a microscope, as if I were turning the screw and the detail were coming out. And here doubtless, working side by side with contiguity, we have the process of fusion. In the first place the idea gives strength to answering elements (MIND Nos. 43 and 46) which were there and were not noticed, or which come there on fresh presentation when their supports are strengthened. We may think here of the perception of obscure sensations, or again of the action of fixed ideas and moods on the environment. But we have a second case where the variety is *produced* by our wills. We may illustrate this by the play of our thought or imagination. I think of a man, and then of a hundred men, and then further I group and divide these hundred men at my pleasure and, as we say, quick as thought. We have blending here which (with contiguity) transforms the picture before us. The suggested features, it is true, do not strengthen given detail,

[1] Cp. my remarks on Comparison (MIND No. 41). Mr. Bosanquet criticised these (MIND No. 43) in a way that I found very interesting, and I admit that I was wrong in making alternate subsumption *always* necessary. In some cases we do without it, but in others I think this is certainly not possible. We cannot always go from A to B with a point of comparison. We may find that first in returning from B to A.

and so far there is no blending. It is the *basis* of the suggestion which is presented also in the picture, and, by blending, that basis overpowers what is given, partly drives off its detail, and substitutes in part or altogether the detail of the idea. I am far from wishing to underrate the work done by redintegration, but though that work is essential, yet in some respects, and particularly when volition comes in, it is not enough. In the use of blending we must of course see that there are elements to blend; but with that precaution our psychology would, I think, find it a key to unlock several puzzles. The failure of psychology with regard to the creative imagination can, I think, in part be so removed. And at all events, in my judgment, blending explains the origin of voluntary analysis.

There are other difficulties which, no doubt, will occur to the reader. If I had space I am confident that I could deal with most of them; but in conclusion I can do no more than sum up the distinctive features of thought. Thought is first not the whole psychological process. There are always other elements which compete with it for existence within the subject. And so thought is objective, not because its content excludes the self, but because it has to control tendencies which fall outside itself, and solely in the course of my psychical events. Thought is 'normative,' because its process has a standard and end. The result produced by that movement becomes a principle which itself moves, first unawares and then with slowly increasing self-consciousness. And this end struggles both for room to exist within my mind, and strives also against its own defects and failures. Thought once more is "necessary," because its end is able to compel. Within itself one element is because of another, and outside itself it can force competing tendencies. And it is "universal," assuredly *not* because always abstract, nor again because *always* possible for more men than one, but because its connexions are independent of this or that man's private liking, and transcend the immediate deliverance of sense. And it is an obvious "activity," because succeeding it expands the group of the self, and that expansion in its origin and its result is attributed to the subject. Its end, Individuality, must gain all its material from the flux of presentation, but from the very start it ignores 'thisness'. Irrespective of the moment's confused deliverance, the content it takes up is applied to qualify every other context. That what is must be and is eternal, is the principle of all our psychical movement; and this builds up not thought only, but emotion and will. Thought, however,

in its character diverges from these. It cannot make presentation, and, where thought is volitional, where its idea, that is, produces its content particularised in psychical existence, still thought and will are different. To the thought, realised as thought, its mere psychical existence is something necessary, but still *per accidens*—while the essential end of will is reality within the series of psychical events. And, as thought cannot make phenomena, it contents itself without them, and is therefore symbolic and not existential. And, aiming at a totality which events never give, it converts their degradation to ideal uses, while it builds its own world out of them, and lives both in them and apart. And building piecemeal, as it must, it becomes relational, and is free to choose its own relations. Its individuality could not be perfect until all its distinctions were harmonised in one system; and it is therefore driven to an infinity of analysis and synthesis, striving to include all variety within one identity.

Thought, we may say, is the process which aims at and is controlled by individuality, an end, however, to be realised not in existence but solely in content. And, as against will and feeling and the perpetual flood of incoming sensations, it is the process controlled by the identity of the *object*. But, if we ask whether thought is wholly self-satisfied, if it feels not only its internal defects but its estrangement from existence and from feeling and will, if it does not long for a fuller, a more concrete, completion, in which *as thought* it would no longer survive—we must go elsewhere for an answer.[1]

[1] I feel it right not to omit the "Law of Duality". I made its acquaintance some years back when engaged on Logic, and was quite content to ignore it. Now that Mr. Ward has endorsed it, I think I ought to say briefly why I have never accepted it. (1) In the first place I cannot see how the Law comes from Apperception or Attention. The derivation may have been accomplished, but I am quite unable to follow it. (2) The arrangement of thought's content into pairs, and into wholes whose materials throughout are subordinated by couples, is, I think, not always fact. I have elsewhere (*Logic*, bk. iii., pt. i., cc. 1 and 2) pointed out cases which I at least could not reconcile with this Law; and, until I see that done, I must be allowed to doubt if it is possible. (3) So far as the Law expresses fact, it seems to me obviously secondary, plainly derivative. Thought is compelled to be relational, to move by the aid of relations and piecemeal; and, as with relations the minimum is one with two terms, we may say, if we please, that thought's process, *so far as it is confined in its movement and its result to relations*, is in this sense dual. (4) I think that, if we must have a faculty, one of Discrimination would be far more useful than Attention is. The attempt to explain, not Duality by Attention, but Attention by Duality (as Distinction or Comparison), has, I should say, been the more successful of the two. I can, of course, accept neither. (5) Duality *might* mean that in the end thought is ruled by the category of subject and attribute. If so, that statement would require a thorough explanation.

III.—KNOWLEDGE AS IDEALISATION.

By Professor JOHN DEWEY.

THAT the word 'idea,' as commonly used, is about as ambiguous a term as could well be invented, is an old story. I need here to call attention only to two connotations. It implies *existence*, and it implies *meaning* or the content of the psychical existence. When we speak of the idea of virtue, we may mean either the 'idea conveyed' by the term, its significance, or we may mean the particular psychical existence, which occurs now and here in experience, and stands for the meaning. But this double connotation is not confined to abstract terms. It holds equally of the most definite perception,—say, mine of my pen as I write. There is the idea 'in my mind,' an existence coming after many ideas, and before many others; a psychical existence which is a unique, unshareable, irrecoverable experience. What constitutes it we need not here inquire, though our psychological research goes to show that it is a clustering of sensations, visual, muscular and tactile, due to the immediate stimulation of my nervous system. *Similar* stimuli may occur again doubtless, but the present existence endures only while the given stimulus is actually there. How stands it with the other connotation of the term? It is evident that here we are dealing with meaning or significance—all that would be included in the definition, say, of pen, plus the fact that it is now present, which is, after all, part of the meaning, and not of the existence. To state the whole matter simply, every psychical state or 'idea,' in Locke's sense, is at once sensation and interpretation of that sensation or meaning conveyed. It is sign and signification. We do not go here into the theoretical justification of the latter element. We do not ask whether there *is* any pen really there, or whether, if there is, our idea of it corresponds to reality. We merely state the fact that in every psychical experience there is the psychical existence, and there is what this existence stands for to the mind. It is an undoubted fact that the meaning *seems* to be objective, permanent and universal; that the idea of existence, in other words, seems to us to report a reality which is there, aside from our particular mental state, one which is equally there for my intelligence at all times under the same conditions

and for all intelligences. This apparent report is part of the complete psychical fact, but we do not now ask whether it has any right to be, or whether it is an illusion unconsciously superadded to the legitimate content of the fact. Recognising that every psychical fact does have these two aspects, we shall, for the present, confine ourselves to asking the nature, function and origin of the aspect of meaning or significance—the content of the idea as opposed to its existence.[1]

To develop what is meant let us take Locke's favourite example—a perception of gold. If we ask what is psychically present, by way of immediate existence, we shall find that it is only a group of sensuous feelings—some strong, some faint. If we inquire further, we find that the stronger ones are due to a direct stimulation of some organ of sense, while the fainter are due to the indirect stimulation of some central organ. If we simply look at the piece of gold, there are the vivid sensations of colour and muscular tension only; clustered about these may be less vivid feelings of contact, perhaps of slight metallic taste and odour. But it is a mistake to call these latter feelings ideal, and the former real. One class is just as real as the other; the only distinction is one of strength. It is quite true that the weaker feelings may be found upon examination to be due to previous stimulations, and to be due to connexions in the brain previously established, so that now a direct peripheral excitation serves to set up a change in some connected part of the brain and awaken sensation. But as existences, there is no difference in the feelings, whether peripherally set up or centrally excited. The stronger one, as existence, does not report that it is due to present direct stimulation; the weaker one does not report that it is ultimately due to past stimulations. This is a matter of interpretation, and even as interpretation it does not enter into the *perception* of the gold. I repeat, as existence, we have only a clustering of sensuous feelings, stronger and weaker.

But what is perceived is *not* a clustering of feelings of any sort. It has taken centuries of scientific psychological observation even to ascertain that sensations of these kinds are involved at all: so far is their presence from being an element of the content of perception. What is perceived is the thing gold, with its various properties, which the sensations stand for. And in our anxiety to get at meaning, to

[1] In thus calling attention to the distinction of the two senses of the term 'idea,' I am, of course, but repeating what many others have said —among them most clearly Mr. F. H. Bradley, in his *Principles of Logic*, pp. 5 and 6.

find out what is symbolised, we actually neglect utterly that which is the symbol, the psychical existence. What is perceived is, in short, significance, meaning. The amount of perception one has, whether as a babe or adult, as layman, or as chemist, is precisely the meaning that one finds signified by one's sensations: the *sensations*, as such, may be precisely alike in the four cases. Perceiving, to restate a psychological commonplace, is interpreting. The content of the perception is what is signified.

Now, it is to be noted that the meaning constitutes for us the whole value of the experience. As a physiological fact, the occurrence of nerve tremors of some sort may be the important thing. But as a fact of human experience, the important thing is that the experience has significance. It means something to us. It reports something to our intelligence. Absolute nonsense and nonentity are synonymous as matters of conscious experience. It is true enough that without the idea *as existence* there would be no experience; the sensuous clustering is a condition *sine qua non* of all, even the highest spiritual, consciousness. But it is none the less true that if we could strip any psychical existence of all its qualities except bare existence, there would be nothing left, not even existence, for our intelligence. Even the fact that there *is* an experience, aside from *what* it is, is not the sensation itself; it is the interpretation of the sensation. It is part of the meaning. If we take out of an experience all that it *means*, as distinguished from what it *is*—a particular occurrence at a certain time, there is no psychical experience. The barest fragment of consciousness that can be hit upon has meaning as well as being. Take away the meaning, and consciousness vanishes.

We may seem to be dwelling needlessly upon the veriest truism of psychology—that its subject-matter is conscious experience, for that is all that is really meant when we say that significance constitutes the worth of an idea. But, perhaps because it is such a truism, there is no fact so often overlooked. The fundamental distinction between physical facts and psychical facts is not that the former exist in space, the latter in time, or any other specific distinction of mode of occurrence. It is that physical facts as such are facts of existence; psychical facts are facts of meaning. Physical facts have meaning, but they have it as psychical, in relation to intelligence; psychical facts have existence, but the existence does not constitute their express value in human experience. An idiot has as many ideas, *quâ* existences, as Shakespeare; the delirious patient has, in all probability, more in a given time than his physician.

What then is the nature of meaning, of significance, of that which is conveyed by every fact of consciousness, and which constitutes the value of that fact? It is, of course, a mediate factor; it is due to inference. In passing, I must commend this statement to those who are telling us that the only realities which we can ultimately admit are those which are immediately present in some state of consciousness, and that we must reject all inference if we are to get the fact. For my part, it seems that when the mediate element is gone, meaning is gone, and consciousness itself disappears. If someone takes away from me all the inference contained in a fact, hunt as hard as I will, I cannot find but that he has taken with him the fact also. He may have left me with nervous tremors in my brain, but all significance, *i.e.*, conscious experience, is gone. So far is it from being true that we know only what is *immediately* present in consciousness, that it should rather be said that what is *immediately* present is never known.

But we must leave these general statements and come to particulars. That which is immediately present is the sensuous existence; that which is known is the content conveyed by this existence. The sensuous material is of worth only as it is a sign; it is a sign only as it signifies or points out meaning. This meaning is present as mediated. It is not there as existence; it is there as pointed towards, as symbolised. If we owe nothing else to what is called physiological psychology, the experimental result reached by Helmholtz, that we always neglect sensations, or pay no attention to them as existence, in behalf of the meaning conveyed by them, gives physiological psychology a higher scientific stand than introspective psychology has yet attained; for introspective psychology is always descriptive, while Helmholtz's generalisation explains. It is true, for example, that every experience of tone is complex, containing the fundamental and the partials. Yet we are entirely unconscious of this complexity, which as matter of sensuous existence is the all-important thing. Why? Because this complexity is taken solely as a sign of the instrument to which the tone is referred—human voice, violin, piano. We interpret the various combinations of sensations as signifying this or that object. We are equally unconscious of the nature of the sensations in themselves, and of the process we go through. Psychical result or significance is all intelligence cares for. Starting-point and way to this result are swallowed up in what they symbolise. This explains 'unconscious cerebration' on its psychical side. Processes,

whether of perception or of reasoning, are of no account to intelligence except as they lead to meaning. Perception is well defined as unconscious reasoning. And as such it illustrates the way in which the process loses itself in the result. The process is nothing *as* a process, or psychical existence; it is everything in what it means or symbolises. In reasoning proper, the processes are of some account to us, because we know that upon variations in the process depend variations in result. The matter is more complex, and we go through it step by step; but even here we do not pay attention to the process as an existence. We simply take one *meaning* at a time, and then go on to the next meaning. Reasoning is the way in which we separate and unite meanings into one complex meaning. As our power to reason becomes developed, and the subject-matter becomes familiar, we cease considering the various subordinate meanings in their relation to each other. We grasp the meaning as a whole, as we do in perception, and reasoning becomes, as we say, automatic or intuitive. Conversely, when we are in doubt in perception as to whether the result is genuine or is an illusion, we do pay attention to the process. We repeat the process, analysing it into its steps, to see if we have drawn a correct inference. So, when we wish to decide whether that red colour is really on the wall or is due to a purely organic affection, we move the body or head, and observe results, and draw our inference accordingly. We often separate the various steps in perception, just as we often consolidate them in reasoning; but the separation and the consolidation are always of meaning, and never of the psychical process as an existence.

But let us consider another example or two of the fact that we neglect sensuous *basis* and regard meaning alone. Everyone knows that we have two retinal images of an object in every case of binocular vision; that is to say, we have two complete sensuous outfits. In the vast majority of cases, these two sensuous bases are slightly different; in one case in a thousand they may be alike. Yet we are ordinarily conscious of but one object; in some cases, those where the retinal images are similar, we can be conscious of but one, do what we will. I know of no more striking illustration of the fact that sensations, as existences, are nothing for us, while sensations in their symbolic function are for us everything. The sensations *mean* but one object, and, do what we will, we *see* but one object. The duality of the sensation is nothing for us. But we neglect the greater part of the case, when we speak of the matter as

if it were confined to a few special cases of eye and ear, and as if in these cases the sensations, as existences, were only double, or triple or quadruple. In fact, as existences, they are indefinitely multiple in every case. As I touch the table, how many distinct sensations do I have? As the ray of light affects my retina, consider what a chaos of sensations is stimulated. I may remark incidentally that a large number of the psychologists who have occupied themselves with the problem of space-perception do not seem to have realised the elements of the problem. They first talk as if the problem were: How to get space-relations out of sensations, as existences? and secondly, as if the problem were: Given isolated sensations as equivalent to isolated points in space, to tell how these come to be connected with each other in complex space-forms? But the problem in the first place is: How do we *interpret* sensations into spatial meanings? and secondly: How do we interpret *some* sensations as isolated points and *others* as connected bodies? We do not start with separate points which are to be combined through the medium of motion, or in any other way. The separate point is as much an inference, an interpretation of the sensation, as the connected line, surface, or solid. Our experience of one is built up along with that of the other. Sensations, as existences, in spatial perceptions as in all perceptions, are naught; sensations, in their symbolic quality, as inference is put into them and they become meaning, are all.

Our fundamental position is that sensation, as existence, and the process, as psychical occurrence, by which sensations are connected, never enter into knowledge. Knowledge is both the sensation and the process in their significant or sign-bearing quality.

But what is the sense in calling the sign-borne content inferential, and in separating it from the sensational basis as immediate? The general ground is the fact that the sensuous clustering is all that is present by way of immediate existence, and it is convenient to have a term to express that which is present by way of being signified or symbolised. The sensuous basis stands for, conveys to intelligence, the content of the experience, and the meaning is present only as thus represented. The sensations, as immediate existences, have no more meaning than letters of the alphabet or than vocal noises. The meaning is read into them or out of them, as one may prefer to state it. But more specifically, this element may be called mediate or inferential because it is present as the result of a process

of reasoning. There is no need at this time, I suppose, to do more than state the fact that every perception is a judgment based on an inference. It is indifferent to the sensation whether it is interpreted as a cloud or as a mountain; a danger-signal, or a signal of open passage. The auditory sensation remains unchanged whether it is interpreted as an evil spirit urging one to murder, or as intra-organic, due to disordered blood-pressure. The result is arrived at by a process of inference. It is not the sensation in and of itself that means this or that object; it is the sensation as associated, composed, identified, or discriminated with other experiences; the sensation, in short, as mediated. The whole worth of the sensation for intelligence is the meaning it has by virtue of its relation to the rest of experience. Since the rest of experience is not and cannot be present as so much immediate existence, we may well call the element which gives any psychical fact its value mediate.

We have just been introduced to some terms which, indeed, it has long been difficult to keep in the background; terms like 'identification,' 'discrimination,' 'relation'. For this mediate element is precisely what we mean by relation, and the processes by which it is got at, and read into the sensation, are those of association and comparison. It has long seemed to me a remarkable fact that the later writers of the specifically British school of psychology, led by Mr. Spencer, recognise this truth and yet do not think it necessary to revise their fundamental notions of intelligence. I can account for it only on the supposition that they do not attend to the double sense of the term 'idea'. Their general theory of intelligence, as at bottom sensational, requires that it be the sensations as existences which are compared and related. Their theory, as it actually works, is that the sensations in their intellectual quality, as significances, are compared and identified. Their theory as they employ it for purposes of explanation is in direct contradiction to their theory in its fundamental presuppositions. If all intelligence is a product of psychical existences, called sensations, plus their association and comparison, no amount of association and comparison will ever give a result which has meaning for consciousness. Strictly speaking, it is impossible for such processes to occur. But if the comparison of sensations does result in significant experience, there must be a certain intellectual quality in the sensations not due to their properties as bare existences. A relation of identity is not a sensuous skeleton which runs through psychical occurrences and ribs them together. It is identity of meaning; permanence, in short, of intelligence.

And discrimination is not the introduction of unlikeness between ideas as occurrences in the psychical life. They are already as unlike as they can be, each being already a unique distinct existence: as Hume says, every distinct idea is a separate existence. Nor can it mean recognition of this unlikeness of existence, except in the sense that it is recognised that the two psychical occurrences do not mean the same. They may *be* unlike, but we should never know they were did we not discover that they did not point to or symbolise the same intellectual content. They must mean difference of times at least, and conscious experience of difference of times is just as much a matter of interpretation of sensations as recognition of spatial differences is.

Wundt has shown clearly enough, as it seems to me, that association is finally a function of attention; but, not to confuse ourselves with terms, let us take a simple example. Of all the sensations which, as existences, are presented to us at any one time, how many come into consciousness together? To put it in the old-fashioned way, how many ideas can we be conscious of at once? To answer the question in this form: Of idea in the sense of meaning, we can be conscious of but one; of idea in the sense of existence, or psychical occurrence due to separate stimulation, we may be conscious of an indefinite, limitless number. Just as many as can be made to convey one meaning, just so many may be comprehended in one idea. If we make, for the sake of example, the assumption that the universe is a unity, it is theoretically possible to grasp every detail of the universe in one idea. In fact, it must be so grasped, for the unity of the world can only mean that it ultimately possesses oneness of meaning.

In any given complex of presentations, therefore, just as much will be selected and united into a conscious experience as harmonises in meaning. The astronomer cannot attend to the ticking of the clock and to the passage of a star at the same time, because they are *interpreted* in two different ways. Were they interpreted in the same content of significance, they would be, *ipso facto*, members of the same experience. To borrow Wundt's illustration, if the eye sees a falling rod at one place, and there is a noise made at a slight distance, and if the noise occurs regularly after the rod falls, although there is no connexion between them, the sight of the rod and the sound will be united in the same idea. So ineradicable is the mind's bent after meaning, that it will force it, if it be possible. In case, however, the noise is not harmoniously related to the fall of the rod, the mind will have to alternate between the two facts. They cannot both be pre-

sent in the same consciousness. Their unlike significance makes them, by necessity, two distinct consciousnesses.

Unity and difference, relation in short, is always a matter of significance, of content for intelligence, and not of psychical existence. When we say then, as Mr. Spencer and all the later English writers do say, that a sensation is nothing until it is identified and discriminated—that is, brought into relations of unity and difference—it is necessary to remember that the identification and the discrimination are elements of meaning, of relation to intelligence. The sensations, or existences, never unite themselves, and never differentiate themselves. But sensations, as they exist in conscious experience, are always united and differentiated. What is this but to say that intelligence is necessarily involved in every sensation as known, and, therefore, that it is impossible to derive intelligence from any combination of sensations? Let us remember two things: first, a sensation is not knowledge until united and differentiated; secondly, these processes have absolutely no reference to the existence of the sensations, but only to their significance, to the meaning conveyed by them. Can we avoid drawing the conclusions: negatively, that relations—that is, connexions of unity and difference of meaning—can never be produced by sensations as psychical existences; and, positively, that the factor of relation—or ideal significance—is necessarily required to make sensations elements of conscious experience?

This brings us to the fact that relations are thoroughly *ideal*. Lewes frequently noted that science is a process of idealisation, but he seems never to have realised either the true import of idealisation, or the fact that all knowledge, perception included, requires the ideal element. Idealisation is not a process of departure from the material presented in perception, for this material is itself ideal. The idealisation of science is simply a further development of this ideal element. It is, in short, only rendering explicit and definite the meaning, the idea, already contained in perception. In the act of perception we do not realise anything like the whole meaning of what the sensations convey; our interpretation is fragmentary and inadequate. The other processes of knowledge, the so-called faculties of memory, conception, judgment, self-consciousness, &c., are only progressively fuller interpretations, as each introduces some ideal factor—that is, relation—neglected by the previous. Memory, for example, simply makes explicit that ideal relation of our present experience to past experiences, which is involved in every perception, and which indeed makes it what it is,

although in the stage of perception we are not conscious of this relation. Self-consciousness, again, is simply the conscious recognition that the ideal element *is* involved in all knowledge together with what is implied in this statement. Self-consciousness is the idealising process of all knowledge continued till it becomes conscious of itself. But these are aspects of the question that must now be deferred.

We have to ask what is the especial ground for calling the element which makes knowledge significant an *ideal* element? The answer in general is that this factor is ideal, because it is not present by way of immediate psychical occurrence, but as meaning. It is significance; and this is *sig*nificance, presence as symbolised. It is convenient to have a term to denote what is present in the way of meaning rather than in the way of existence, and the term 'ideal' just meets the demand. It meets it negatively in suggesting that this factor is not one of space- and time-existence and occurrence; it meets it positively in suggesting that it is due to intelligence.

This is the point which has now to be shown, and shown not through an examination of the logical *conditions* of experience, but through a psychological inquiry into its *facts*. Whence come the ideal elements which give to experience its meaning? By what process do we interpret sensations so that they become significant to us of objects and events in space and time? These questions are simply the fundamental questions of psychology, and can be answered only by a complete treatise on psychology. Nothing but very general considerations may be expected of me here. The answer which is ordinarily given to the question, the one we have just seen given, is undoubtedly the correct answer. Sensations get meaning by being interpreted through their relations to the rest of experience; through the processes of identification and discrimination. But the sensation is not identified with nor discriminated from another sensation. This would add no whit to its significance, besides being a process psychologically impossible. Previous sensations, as existences, are gone for ever; gone as much as the time in which they occurred. It is true, doubtless, that they have left organic traces of their occurrence in the brain; it may be true that these organic traces may, by indirect stimulation, re-awaken sensations like to the previous ones. But in this process there is, as such, no aid. There is so much sensuous material indirectly stimulated added to the sensuous material directly stimulated, and that is all. If sensations before were multiple, chaotic,

needing interpretation, there has been added more multiple chaotic material, equally in need of interpretation. Multiplication of sensations is not interpretation of sensations previously existent.

The identification is of the meaning of the present sensation with some meaning previously experienced, but which, although previously experienced, still exists because it *is* meaning, and not occurrence. This identification gives the present sensation all the meaning possessed by those experiences with which it is identified. It renders it symbolic of whatever these other experiences signified. If I attribute any meaning to the idea gold, all that meaning is transferred into the present sensation as soon as this sensation is seen to have the same symbolism. And it is seen to have the same symbolism just because the mind brings this meaning to bear upon the given sensation. There is undoubtedly a mechanism, conveniently termed the association of ideas, which insures that the mind brings a certain set, as it were, of its interpreting activities to bear rather than another, but the final result of meaning is wholly dependent upon the group of ideal significances which is brought to bear. The interpreting activity may bring itself to bear in such a way that it shall regard the sensations as iron pyrites or as the talisman of life; but upon this way depends the meaning of the experience. In short, the sole way of accounting for the fact that we have significant experience, or that sensations, in addition to being psychical occurrences, are also psychical meanings, is that the mind conserves permanently out of every experience the meaning of that experience, and, when it sees fit, reads this conserved meaning into a given sensation, thereby completing the transfer of significance. The experience, as an existence at a given time, has for ever vanished. Its meaning, as an ideal quality, remains as long as the mind does. Indeed, its remaining *is* the remaining of the mind; the conservation of the ideal quality of experience is what makes the mind a permanence.

If it be asked, then, how psychical experience can begin, the answer is, indifferently, either that it does not begin, or that it begins as the beginning of the development—the manifestation—of internal content of intelligence. It does not begin in the sense that meaning arises out of that which has no meaning. It does not begin in the sense that sensations as mere occurrences ever group themselves so that they have in addition meaning. For meaning is mediate, being through relation; it is ideal, being what is symbolised to intelligence. If intelligence were not present with a

minimum of intelligent or ideal quality to read into sensations, these sensations would never get significance, or presence in conscious experience. The mind must possess at the very outset the idea that there is meaning there. It must project into sensations the conception *that* they are significant, even if it does not develop the measure of this significance. A mind which does not come to sensations with an ineradicable pre-judgment that the sensations are interpretable, that is, possible bearers of an ideal quality, does not have the starting-point for any interpretation, and its sensation could not ever get a beginning on the road of meaning. The sensations might conceivably revive each other and fuse with each other indefinitely, but meaning is absent until they symbolise each other; and they fail to symbolise each other until the *meaning* of one is represented by another. But, after all, the conception of the recalling and fusing of sensations is not one to be allowed, except upon the supposition of the interpreting activity of intelligence. The very fact that sensations are so connected that the peripheral stimulation of one kind will set up the central stimulation of another is due to the unification of meaning which has some time made them fractional members of one whole, so that one cannot recur, even as existence, without the other. Attention has at some time laid its delaying hand upon them and conjoined them; it has selected them for and excluded others from its connecting grasp; and this is to say that they have been given a unity in that which they symbolise. Sensations cannot revive each other except as members of one whole of meaning; and even if they could, we should have no beginning of significant experience. Significance, meaning, must be already there. Intelligence, in short, is the one indispensable condition of intelligent experience.

This seen and stated, it becomes a question of simple fact how far developed in any case the necessary intelligence may be. For our general considerations, it is enough that the minimum requirement of an intelligence which recognises that its sensations have meaning be met; whether any definite meanings, and, if so, what, are projected into sensations, is at present a matter of indifference. We do not care whether they are interpreted as in space and time; as possessing necessarily quantity, quality, relation and modality or not. It is enough to know that they become experience only as interpreting intelligence projects into them something of its own being; they are what they are through this relation to intelligence. There is therefore no beginning of intelligent experience, except such as involves intelligence.

This leads us to recognise that intelligence has a necessary internal permanent content; and that it is only because it has, and because it supplies it to its sense-stimuli, that there ever arises significant experience, and that this occurs just in the degree in which intelligence possesses a synthetic content which it can project into its stimuli. In other words, whether we inquire after the origin or growth of mental experience we find involved a synthetic intelligence, that is to say, an intelligence which possesses a content as opposed to one which is purely formal. Recent Empirical Psychology shows that it has run the circuit and returned to the position of Locke. Locke fitted the mind out with sensations on the one side, and associating comparing activities on the other. These latter were purely formal. They merely operated from without *upon* the material of sense, dividing and combining. Then Psychology attempted to get along with the sensations only. But it was driven to re-introduce the associating activity, and now we see it driven to bring back the comparing relating activity. We have complaints that the Empirical School has neglected the native reading capacity of the mind, and that we must recognise that it is endowed with the ability to identify and discriminate. But this relating capacity is still conceived as formal, although the conception involves a contradiction. The relations are conceived as superinduced, as it were, upon the material of sensation, introducing *ab extra* order into them; instead of as necessary to constitute their entire being as members of conscious experience. When Psychology recognises that the relating activity of mind is one not exercised *upon* sensations, but one which supplies relations and thereby makes meaning (makes experience, as Kant said), Psychology will be in a position to explain, and thus to become Philosophy.

The mention of Kant's name suggests that both his strength and his weakness lie in the line just mentioned. It is his strength that he recognises that an apperceptive unity interpreting sensations through categories which constitute the synthetic content of self-consciousness is indispensable to experience. It is his weakness that he conceives this content as purely logical and hence as formal. Self-consciousness has a material, a psychological content. Kant was never able to bridge the dualism between his *a priori* form and his *a posteriori* content, because he conceived of sensations as furnishing meaning provided only they were unified by the forms of intuition and the categories of understanding. In truth, the sensations supply no meaning.

It is the sensations, however, with the ideal content given them by the self, which are meaning. The self does not work with *a priori* forms upon an *a posteriori* material, but intelligence as ideal (or *a priori*) constitutes experience (or the *a posteriori*) as having meaning.

But I must return from this digression. Experience begins when intelligence projects something of itself into sensations. We have now to recognise that experience grows, or gets more meaning, just in the degree in which intelligence reads more ideal content into it. The adult has more experience than the child—the Englishman than the Bushman—because he has more ideas in his intellect to bring to bear upon his sensations and thus make them significant. Were the theory of our recent writers of the Empirical School correct, the difference must be (1) that the English adult has his formal capacity of relating more sharpened, and (2) that he has a greater number of revived sensations which he combines with his present. But it ought to be evident by this time that (to take the latter point first) the addition of revived sensations would in itself make the experience more confused, make it less significant. It is the addition of sensations selected because they possess the same meaning, it is their unification with the present as same content to intelligence, it is their discrimination as suggesting here and there a new and different shade of meaning,—it is, in short, the supplying of *meaning through sensations*, and not of sensations, that makes the experience more significant. And this is to say that experience grows as intelligence adds out of its own ideal content ideal quality. So we may see (to take up the other point) that any amount of sharpening of the mere power of identification and discrimination, of comparison as a formal power, would add no whit to the experience. The experience as an existence, as a clustering of sensations, is already there. The sole thing is to find out what it means, and this can be done only as there is supplied the mediate relational ideal factor. The growth of the power of comparison implies not a formal growth, but a synthetic internal growth. It implies that when the mind is stimulated to an act of comparison, it has a more varied, complex, better organised system of ideas or meanings to bring to bear upon its sensations, and thus to transfer to these its own content of significance.

This transference evidently incorporates the given experience into the system of meanings or of intelligence, and thereby the better prepares the latter for future apperceptive acts; its incorporation adds to the synthetic content of

intelligence, and thereby to the meaning of possible future experiences. The process of the growth of experience is accordingly a reciprocal one. Any experience has meaning as the self projects this meaning into it from its own ideal store; this projection appropriates the given experience, as to *its* meaning, into the ideal store of the self, thereby farther developing it. Knowledge might be indifferently described, therefore, as a process of idealisation of experience, or of realisation of intelligence. It is each through the other. Ultimately the growth of experience must consist in the development out of itself by intelligence of its own implicit ideal content upon occasion of the solicitation of sensation. But this is again a thought to be elaborated at another time.

We may sum up our results as follows: meaning constitutes the worth of every psychical experience; meaning is not bare existence, but is an inferential mediate factor; it is relation and is ideal; as ideal it is supplied by intelligence out of its own content; this content constitutes, indeed, the reality of intelligence. I think we may have reason now to congratulate ourselves that we did not, at the beginning, make any inquiry into the connexion between this ideal quality or the meaning of experience and objective reality. For, it seems to me, that would have been to begin at the wrong end, and imply that there was somehow, somewhere present to consciousness, a conception of what reality is by which we could measure the significance of our experience. And I have become convinced by the inquiry set forth in the preceding pages that if reality is itself an element in conscious experience, it must as such come under the scope of the significance, the meaning of experience, and hence cannot be used as an external standard to measure this meaning. The reality of experience is, in short, an element of its interpretation, of its ideal quality or relation to intelligence. We do not have externally given to us some fixed conception of reality which we can compare with our ideas, and thereby see how much agreement with reality the latter have. Reality, like everything else that has meaning, is a function of our ideas. To find out what it is we must look within these ideas. It is the great merit of English Psychology that in attempt, at least, it has recognised this. It is its defect that it has tried to find this reality in the ideas, as existences, where naught can be found. We have now to see whether better fortune may meet an attempt to discover the nature of reality, where all is ultimately contained and must be found in the ideas as significances, as meanings. I hope, accordingly, at some future time, to ask after this relation of idea to reality.

IV.—FURTHER PROBLEMS OF HYPNOTISM. (II.)

By Edmund Gurney.

In my last paper (Mind No. 46) I drew attention to the subject of hypnotisation at a distance, as one which certain recent cases had made it as impossible for students of Hypnotism as it must in any case have been for students of Telepathy to overlook. I advanced the view that these telepathic entrancements necessitated no hypothesis of will-power or 'psychic force' capable of producing effects in external matter—*viz.*, the organism of B, the 'subject'—which differed from their cause in A, the hypnotiser; that the phenomenon might be perfectly well regarded as a genuine instance of thought-transference or mental suggestion—certain mental movements of A's, and certain brain-movements correlated therewith, being sympathetically *reproduced* in the mind and brain of B, who was entranced by the idea of trance in association with the idea of A, just as he might be entranced by those ideas when suggested by A's voice and presence. I further pointed out that it is quite in accordance with what we know of telepathy in other directions that these ideas, when transferred, should take effect in some secondary plane of the 'subject's' mind—a plane segregated off from the conscious self as ordinarily understood.[1] And I must now resume the discussion by recurring for a brief space to the connexion between telepathic hypnotism and other forms of telepathy, which occupy the greater portion of *Phantasms of the Living*. I may begin by showing how, on the view which I have advanced as to the former, a certain difficulty, or rather a certain lacuna, which the latter present, seems to be removed.

To state the position briefly—the principal telepathic phenomena dealt with in that book are (1) experiments in thought-transference, where 'agent' and 'percipient' are near one another, and where some prominent idea in the 'agent's' mind is reproduced in the 'percipient's' mind as an idea simply; and (2) cases of spontaneous occurrence

[1] For further proofs of the reality of mental processes carried on apart from the normal stream of the individual's consciousness, and in that sense without his knowledge, see Mr. Myers's paper on "Automatic Writing," and my own on "Peculiarities of certain Post-hypnotic States," in pt. xi. of the *Proceedings of the Society for Psychical Research*.

(*i.e.*, not, as in experiments, deliberately sought) where the 'agent' and 'percipient' as a rule are far apart, and where an impression representative of the 'agent' is made on one or more of the 'percipient's' senses. These two sorts of occurrence seem, on the face of them, very different; if they are fundamentally akin, they seem to need a connecting link; and we can imagine various intermediate phenomena which would serve the purpose. The link might consist in experiments similar to the ordinary experiments in thought-transference, except in the point that the two persons concerned are *far apart* instead of near together. I have to admit the absence, and also the urgent need, of such experiments. They would, however, be difficult and tedious to carry out; and a long series of results, such as would be required, could hardly be obtained except by the aid of telegraph or telephone.[1] Another sort of link would be if the 'agent's' conscious idea *spontaneously* reproduced itself (without the coincidence being fairly attributable to chance) in the mind of a distant percipient. Now of this *Phantasms of the Living* contains a good many well-attested specimens. It is true that the idea reproduced has not been exactly of the same order as those reproduced in thought-transference experiments; that is, it has not been of anything quite so simple and unemotional as a card, number or diagram; but

[1] An excellent form of experiment for the purpose would be the guessing of numbers, in the way exemplified in *Phantasms of the Living*, vol. ii., pp. 653-4. If the two persons concerned in that series would try a similar series at a distance, the necessary information as to when each guess had been made and a fresh number might be taken being conveyed by telephone, and if successful results were obtained, the fact would be of the very highest interest and importance. "Why then," I may be asked, "do you not get the trial made?" The reason is typical of difficulties which only those actively engaged in 'psychical research' can appreciate. Their material for study consists in human beings with occupations and wills of their own, and as a rule with no independent interest in the subject. Even supposing two quiet rooms connected by the necessary apparatus to be secured at the necessary hours, the plan proposed would demand a considerable amount of trouble, and perhaps in all (counting time for going and coming back) an hour and a half of time, on each of about 15 days. Now to any *bonâ fide* psychical researcher, this expenditure of time and trouble would of course seem the merest trifle. But I would ask each of my readers whether he feels able confidently to make such a demand of any couple, taken at random, among his female acquaintance, in the interest of an inquiry of which they do not understand the bearings, and of which their only idea is that it is bothersome and scientific. At present the persons who would be willing to take the trouble are probably nearly as rare as the persons sufficiently endowed with the necessary faculty to give the experiment a chance; and assistants in whom both conditions are realised are clearly not likely to be found every day, or even every year. But of course the desirability of finding them will be steadily kept in view.

as a rule has represented sights or sounds which have been occupying the 'agent's' senses at some moment of crisis or excitement. This difference, however, can hardly surprise us. For in the first place we should expect some exceptional affection of the 'agent' to be a necessary condition of the spontaneous transference, just as an exceptional and often painful concentration of attention is necessary in the card- and diagram-experiments. And in the second place, spontaneous transferences of ideas unconnected with any specially-marked moment might occur between the same persons every day, without ever having a chance of exciting attention or being recorded. In the mind of a 'percipient' who was not (as in the experiments) deliberately putting himself into a passive and receptive attitude, a transferred idea would probably at most reach the bare threshold of consciousness, where it would meet and jostle with a hundred others, while bearing in itself no sign of its origin: what, then, is the likelihood that the 'percipient' would pick it out, note it, and ask all his absent acquaintance whether their minds were fixed on a similar one at that particular time? And even if some sporadic correspondences of the sort were noted, they could scarcely be presented as 'ostensive instances' of telepathy, considering the immense range for accidental coincidence that the world of ideas common to all of us contains. I think therefore that the ostensive instances which I have mentioned present in their content as much affinity to the experimental transference as could reasonably be expected.

But yet a third link of connexion between the experimental and the spontaneous cases would be of this sort—if an impression representative of the 'agent' were made on the 'percipient's' mind, without any affection of his senses. Such a case would resemble the majority of the spontaneous transferences in the nature of the idea transferred, and the majority of the experimental transferences in the absence of sensory affection on the 'percipient's' side; and the type would indirectly afford a strong indication that the sensory affections—phantasms of forms and voices—which characterise so many of the impressions that have coincided with the death or danger of friends at a distance, are really mental creations of the 'percipient's' own (or, as I have never hesitated to call them, *hallucinations*), in which he invests the idea of the 'agent' that has telepathically reached him. Now the cases of distant hypnotisation, explained as I have here endeavoured to explain them, supply exactly this transitional type. They are truly experimental, inas-

much as the attempt to exercise the distant influence is deliberately and consciously made by the 'agent'; and the idea of him which reaches the 'subject's' mind, sometimes above and sometimes below the threshold of consciousness as we understand it, does not in either case emerge into sensory form. I may add that cases are on record where yet further links or gradations appear; for instance, a person noted for his mesmeric powers succeeded in producing a strong impression of his presence, which nevertheless contained no sensory element, to two friends at a distance, who were not in any degree hypnotised by the impression.[1]

One further point remains, in which a comparison of the phenomena of hypnotisation at a distance with those of non-hypnotic telepathy seems to throw light on both. In *Phantasms of the Living* I have drawn attention to the *impulsive* quality which seems often to characterise a telepathic impression; and which seems to be shown equally in the forms of experiment where a motor-impulse is produced, as, *e.g.*, in the palmary instance of Mr. and Mrs. Newnham referred to in my last paper; in one or two spontaneous cases where the impulse similarly was to write, and the transferred idea appeared in the writing; and in other spontaneous cases where a definite and peculiar impulse to movement or action was conveyed; but also more generally, I venture to think, in that very fact of the frequent externalisation of the impression as a sensory percept, which has been mentioned in the preceding paragraph.[2] Ordinarily, of course, our ideas of our friends, when they occur to us, do not project themselves outwards as hallucinations representing the friend's forms or voices; how is it that telepathic ideas so constantly do so? The fact cannot, I think, be disputed by anyone who accepts the telepathic evidence, unless on the hypothesis—not likely to be entertained by readers of MIND—that what is perceived is a material body, capable of emitting or reflecting light and of setting sound-waves in motion. I at any rate see no escape from the alternative that it affects the percipient's senses either by

[1] *Phantasms of the Living*, i. 99. It should be noted that it is by no means invariable, in the spontaneous cases, for the idea of the 'agent' to be externalised in the senses. Sometimes the simple idea of his death is conveyed (*e.g.*, in the cases numbered 45, 87, 401); but inasmuch as that idea may reasonably be supposed to have been present in his mind during the approach of death, such cases may as fitly be referred to the class where the 'agent's' idea is literally reproduced as to the class where the *idea of him*, rather than *his idea*, is the subject of transfer.

[2] See *Phantasms of the Living*, i. 537-8.

stimulation from without or by projection from within. Now if we accept this forceful quality, this tendency to push on into an extreme form, in one class of telepathic effects, we shall naturally look out for it in another class; and the recognition of it as a tolerably general characteristic is perhaps the only sort of explanation that it at present admits of. What sign then do we find of it in the hypnotic cases? No conclusive sign, at first sight, it must be admitted. For the mere idea, the mental suggestion, of the trance-condition, in association with that of the hypnotiser's personality, has been already represented as an adequate ground for the supervention of the trance, alike whether the idea be suggested by the hypnotiser's words and presence or by telepathic transference—the exceptional effect being accounted for by the exceptional sensitiveness of the previously-hypnotised 'subject,' who is in a state, so to speak, of highly unstable equilibrium. It would clearly then be illegitimate to supplement this view by attributing an exceptional impulsive quality, or vigour of impact, to the telepathically-transferred idea, *unless* we were able to suppose some similar condition in the cases where the hypnotiser's words and presence are ostensibly the only cause that works on the 'subject'. Well, the point is now reached at which this very supposition can not only be intelligibly made, but shown to be in some instances at any rate indispensable.

It will be remembered that in speaking of verbal or physical suggestion of the idea of trance, I pointed out that this alone was not enough to induce the state even in a sensitised 'subject,' who might meet with the idea in a book without undergoing any effect whatever; and that the idea of the original hypnotiser's personality was at any rate an indispensable element. But it may be urged with equal reason that something more still is needed; for this other idea might also be met with in a book—*e.g.*, the 'subject' might read a printed account of his previous entrancements by his special hypnotiser without a fresh entrancement ensuing. What, then, makes the difference? Is it the sense of the operator's authority, which the 'subject' is made to feel either by his tone and manner or by a general belief in his power? Very often, probably, this is enough; but the French cases epitomised in my former paper clearly show that it is not always enough, and no single point in them is more instructive than this. Prof. Pierre Janet, Dr. Héricourt, and Dr. Dusart all observed that the 'subject's' *belief* that the entrancement was being then and there attempted and willed by the special hypnotiser was ineffective, if the hyp-

notiser was not really concentrating his mind in the manner supposed. This fact seems explicable only on the hypothesis that, when the effect is produced, some cause is at work beyond the ostensible cause of verbal and physical suggestion; and the cause which, on the grounds of analogy and of parsimony of assumptions, at once presents itself is surely no other than *mental suggestion*—telepathic, even though the two persons are in the same room, as being transferred otherwise than through the recognised channels of sense, and carrying with it the impulsive quality, which now involves the further development into trance, as in other cases it involves the further development into hallucination. In this way that inscrutable something which has been described as specific 'mesmeric' power would reduce itself (for the cases in question) to identity with the more comprehensible and general sort of telepathic 'agency'; and its peculiar effect on the 'subject' is simply a pushing on into an extreme form in the direction of *least resistance*, which is here determined as that of hypnotic trance by the pre-established sensitiveness to this particular idea. Such an agency is no longer specific in the sense of being an occult mode of influence which a few specially endowed persons have always at command, and can bring to bear at a moment's notice on any favourable 'subject'; it receives its specialisation at the *receiving* not at the *transmitting* terminus.

"But," the 'mesmerists' might object, "does not this view of the hypnotic cases ignore the palpable fact of the *rapport*? Is it not mere juggling with words to deny any specific quality to 'mesmeric' agency, if the *rapport* which puts the 'agent' in connexion with the 'subject,' and which has been mesmerically established, remains specific? And how can that description be denied to it if, as usually happens, each of the two persons concerned is indispensable to the other—if A can at that particular time be entranced by the suggestion of no one in the world except B, and B's suggestion can at that particular time entrance no one in the world except A?"

Now, in the first place, a certain ambiguity lies in the word *rapport*. When A's thought or sensation has been transferred to B, we may say, if we like, that A and B were in *rapport;* but this is merely to coin a useless definition, and to throw away a useful word, unless we mean by *rapport* something which is *different* from the transference, and which has *conditioned* the transference. Taking this latter sense, I have no doubt that such a thing as hypnotic *rapport* exists, and I have no objection to the word *specific*

as applied to it; but I believe the true application to be quite remote from any theory of occult or 'mesmeric' influence. For why need we assume the parties to be connected by any more mysterious bond than the one before defined (MIND No. 46, p. 228) in connexion with hypnotisation at a distance—the permanent impression of their past relations to one another? On the view of psychical transference (as opposed to physical effluence) which I have founded on the distant cases, it is hard to see that any further condition is either possible or required. That this permanent impression in the hypnotic cases is peculiar, I should fully admit; but only, I conceive, in so far as the *relations themselves* are peculiar. Now, their peculiarity is sufficiently patent: the 'subject's' mental abandonment to the idea of his hypnotiser, with all the oddities of conduct to which this one-sided engrossment leads, are phenomena quite special to the hypnotic state.[1] And inasmuch as rare

[1] This engrossment is implied, of course, in that abnormal responsiveness to the hypnotiser's suggestions which I regard as the most distinctive mark of the hypnotic state. But it is shown also in other ways. The 'subject' will often seem blind and deaf to the presence and voice of everyone else, and can only be made to see and hear some other person by the hypnotiser's pointedly bringing such person to his notice, so that the two become associated in his mind. A sensitive 'subject' will frequently follow the hypnotiser about the room or the house, will show uneasiness when he disappears, and will even feel a strong impulse to rejoin him after an interval of a day or of several days. The same peculiarity seems to be shown in a fact which has not, I think, been enough noticed, but as to the reality of which I would appeal with confidence to anyone who has assisted at hypnotic experiments conducted by a good many different operators at a good many different places. I mean the readiness with which what may be called *hypnotic fashions* are established. A group of 'subjects' in one place, who have been a good deal under the influence of the same operator, will develop a quite different set of habits from another group in another place. A rough instance of this is where one group prove more or less unamenable to methods of entrancement or of awakening which are specially successful with the other; as, *e.g.*, I have found the 'subjects' of one operator wake with certainty at a smart blow or sudden command, while those of another seemed recalcitrant to everything except the flicks of a towel or large handkerchief to which they were accustomed. But their behaviour during the trance often shows a far more subtle conformity to what the operator expects; so that there come to be veritable *schools* of hypnotism—the phenomena taking the course marked out for them by the operator's general view of the 'subject'—a view which may really have originated to a considerable extent in accidental peculiarities of individual subjects. I should be inclined, for example, to account in this way for much of the difference between the observations of Nancy and of the Salpêtrière, and, in consequence, for much of the difference in the theories associated respectively with the two localities. But I cannot pursue this subject in a footnote. What I wish to point out is simply that these facts seem to imply a far more continuous and minute attention, on

causes may naturally have rare consequences, there is no difficulty in supposing that a consequence of this special relation is a special subsequent penetrability (so to speak) of one mind by the other—a partial weakening, in a single direction, of the barrier which normally isolates individuals, and confines the experience of each to sensations received through the recognised channels or ideas originated by his own activities. Not, of course, that we should have had any right to *predict* such a consequence: telepathy could never be deduced *a priori* from anything else. But when, as a matter of fact, we find psychical transferences taking place between certain persons after, and not before, their minds have been in a certain peculiar relation to one another, it is impossible not to suspect that this relation is a vital condition of the transference; and if this relation has ceased to show itself in any recognisable form at the time when the transferences are observed, we can but seek the immediate condition in the permanent impression which it has left. This permanent impression, then, and nothing else is the *rapport;* and it will be seen how everything exceptional and mysterious has now disappeared out of it. In the line of conditions the only exceptional part was found to lie elsewhere—in the well-recognised psychological peculiarities of the hypnotic state; and the *rapport* itself, as the abiding latent sense of past relations, proves to be fundamentally the same in kind as that which has pre-existed in a large majority of the spontaneous telepathic cases—where the 'agent' and 'percipient' have been connected by ties of affection or acquaintance, which we may equally call specific, in the sense of being personal to each pair, but not with any more occult reference.

And if *rapport*, as a hypnogenetic condition, is not exceptional in *kind*, neither does it seem necessary to suppose it exceptional in *strength*—to suppose, that is, that it facilitates the telepathic transference in a higher degree than is possible or common in cases unconnected with hypnotism. For we must distinguish the transference as such from its further

the part of the 'subjects,' to the substance and tone of remarks made by the operator in their presence, and a far stronger impulse to satisfy him, than would be exhibited by persons of the same degree of intelligence and education in ordinary life, or than would be guessed from the appearance of dulness and apathy which is usual to a hypnotised person when no direct appeal is made to him from outside. I am glad of this opportunity of modifying some expressions in a former paper (MIND ix. pp. 489-90) where a too large concession was made to the idea that psychical functions are abolished, or nearly abolished, in the lethargic stage of hypnotism.

effect on the 'subject'. It may very likely be the case that the hypnotisers and 'subjects' who, if the necessary trial were made, would yield us examples of telepathic hypnotisation, are more numerous in proportion to the total number of hypnotisers and 'subjects,' than are the persons who at death produce a marked telepathic impression on some friend or relative, in proportion to the total number of persons possessing friends and relatives. But this seems quite sufficiently accounted for by the fact, already noticed, that the hypnotic 'subjects' are hit (so to speak) at a specially explosive spot. The idea that reaches them has been associated on former occasions with precisely the marked consequence that now again ensues; whereas the idea of a friend, or even of a friend's death, has not on former occasions been associated with any marked consequence, such as a hallucination suggestive of his presence. The hypnotic 'subjects,' in short, have been adapted by artificial means to respond strongly to the telepathic stimulus; while of people at large it is only a small minority in whom the natural condition for such strong response exists. And here let it be specially observed that it is by absence of *response*, not absence of *stimulus*, that we shall most readily and reasonably account for the rarity, in comparison with the numbers who die, of telepathic affections of the friends and relatives of dying persons. That rarity has been felt as an initial obstacle to the whole telepathic theory; and there is no doubt that telepathic action becomes more comprehensible the more universal we can consider it. Now if, as analogy would indicate, the marked cases of telepathic phantasms are only the 'ostensive instances' of a class of events which may occur with all degrees of diminishing intensity, we may fairly suppose some of the degrees to be *sub-liminal;* and if so, numbers of spontaneous transferences might naturally take place, conditioned by the normal bonds of affection or acquaintance, which fail to produce any recognisable effect—fail, that is, to make their way into normal consciousness as clear ideas or sensory hallucinations—through a lack of some necessary condition in the recipient mind.[1]

This may, perhaps, be made clearer by an illustration drawn from certain further facts of hypnotism, which are

[1] On this view, it will be seen, telepathic phantasms (and possibly telepathic affections of every sort) can be represented—no less than the special classes above-mentioned—as emergences or developments of ideas which have in the first instance affected an unconscious part of the percipient's mind.

also worth noting on their own account in connexion with the subject of 'rapport'. A hypnotised person will sometimes be able to detect the faint whisper of his hypnotiser, amid a babel of sound which makes it absolutely indistinguishable to anyone else.[1] How is this fact to be accounted for? Certainly not by hyperæsthesia of the sense of hearing; for no such condition is observed in relation to any other sound. We must again fall back on *rapport*—but again on *rapport* of a quite comprehensible kind. It will consist, not now (as in the cases of hypnotisation by suggestion) of the 'subject's' memory of his *past* relations to his hypnotiser, but in his sense of the *present* relation—the pervading dominance of the idea of that one particular person in a mind whose reflective and discursive powers are in abeyance, and whose passive absorption is undisturbed by competing images. This dominant idea is now the vulnerable spot; and consequently a stimulus which strikes that spot—in other words which impresses the sensorium in a manner previously associated with impressions of the hypnotiser—wakes a reverberation which detaches itself in consciousness. But for the purpose of my illustration the point to observe is that the *stimulus* acts equally on the other persons present; for in the midst of perfect stillness they would hear the whisper, and, as an element in the total of sound that is being produced around them, it must undoubtedly affect their sensorium; only, not falling on any vulnerable spot, it is totally unobserved. Just so, I conceive, the psychical stimulus in the cases of telepathic transference: the transference may take place, and produce a certain psychical result; but, without the appropriate condition, that result will not reach any appreciable strength. The condition of response might be compared to a sounding-board: a number of strings may be faintly stirred by the telepathic wave; but only those which are backed by a sounding-board will reverberate audibly. That only a small minority of minds should naturally present this condition is not a point of any difficulty—or at any rate is one admitting of just as much and just as little explanation as that a small minority of persons should be hyper-sensitive in any other direction. But where the condition exists, the *rapprochement* of the rare natural hyper-sensitiveness of the ordinary telepathic percipient to the rare artificial hyper-sensitiveness of the hypnotic 'subject' appears to me to be both legitimate and instructive; while the rejection which it involves of the idea of 'mesmeric' *rapport*, as anything

[1] *Proceedings of the Society for Psychical Research*, vol. i. 255-6.

per se and exceptional, tends still further to the simplification of the telepathic theory.

Before leaving the subject of hypnotic *rapport* and its effect on the telepathic transference of ideas, I must point out that I have been speaking exclusively of *hypnogenetic* ideas. In respect of other phenomena of thought-transference, exhibited during the actual duration of the trance, it would be rash, I think, to assert that the *rapport* with the operator is not a condition of transference more favourable than any that spontaneously presents itself. I at any rate do not know of any results of experiments conducted with persons in a normal state which can be compared, for scope and complexity, with some of the hypnotic cases—*e.g.*, with the important set of observations recorded in *Phantasms of the Living*, ii. 336-43; where an exceptional facility of communication seems to be shown in two ways,—(1) by the great frequency and certainty of the effects; and (2) by the idea communicated being often one which passed through the hypnotiser's head when she was not in the least thinking of her patient or of attempting a transference, and upon which therefore she was not concentrating any special energy of attention. The very fact, moreover, that the phenomena of 'community of sensation' were observed with hypnotised persons many years before they were obtained with others may seem to point in the same direction; and in most of these cases it looks as if the results were directly dependent on the establishment of the hypnotic relation. At the same time it must be remembered that 'community of sensation' is a very rare phenomenon even with hypnotised 'subjects'; while, on the other hand, we are not yet at all in a position to decide what proportion of unhypnotised persons might show high susceptibility to this and other forms of thought-transference, if only the necessary experiments were widely made. It should be noted, moreover, that quite as striking results have been obtained in the particular line of 'community of sensation' with non-hypnotised as with hypnotised 'subjects' (*Phantasms*, i. 52-8); and that several forms of transference have been obtained exclusively with persons in a normal state. On the whole, the conclusion seems to be that the effect of the hypnotic state in facilitating and strengthening telepathic impulses, though occasionally very decisive, is very far from constant. We should probably gain a clearer view on the subject if persons who have shown themselves to be susceptible when in one state were subjected to experiments when in the other; and if hypnotisers who have obtained community of sensation with their 'sub-

jects' would experiment with other persons who have proved to be sensitive 'percipients'. But such suggestions would be totally unpractical unless we might hope that as psychical research gradually becomes legitimised, the human material available for study will become less rare.

To return now to the special hypnogenetic problems: I have shown grounds for believing that in some cases of hypnogenetic suggestion—where the parties are together and the suggestion is conveyed by physical means, no less than where they are separated and the suggestion is psychical, a true psychical or telepathic agency is exercised, of a sort foreign indeed to the hitherto-accepted theories of hypnotism, but equally remote from 'odic' or 'mesmeric' effluences. But if in these cases the first indispensable conditions of the effect present themselves as *mental* phenomena, the question naturally arises what relation, if any, do mental phenomena hold to the other hypnogenetic methods, where the entrancement takes place (as with fresh 'subjects' it almost always does take place) after the application of distinct physical processes? I have purposely deferred these cases of primary hypnotisation till those of the secondary (or suggestional) class had been discussed, as being at the very outset harder to discriminate —for this obvious reason: that while we can be sure that there is no effective exercise of *bodily* energy, when the 'subject' is sitting apart or alone and the mode of influence is ostensibly mental, we cannot similarly be sure that there is no effective exercise of *mental* energy, when the operator takes him in hand and the mode of influence is ostensibly bodily. In the latter case, therefore, the actual or possible complication of causes makes analysis very difficult. The question is really a triple one; for we may ask (1) whether the hypnotiser's mind has some direct share in the effect, originating a psychical transference in the sense of 'psychical' before explained (MIND No. 46, pp. 222-3); or, supposing his body alone to act directly, by touch, passes, &c., whether (2) the effect is purely mechanical and due simply to the pressure or the gentle stimulation which his muscles bring to bear, or (3) is of a more inscrutable and nervous sort; in which last case, we must observe, his mind may condition it, as in the first case, though less directly—since from whatever part of the body the nerve-force be supposed to act, the total of energy evolved may include certain cerebral changes of which certain mental facts, such as concentration, may be the necessary correlates. The *second* of these hypotheses is, of course, the one in favour of which physiologists

have unhesitatingly pronounced. This has been almost inevitable; for the first of the three was not likely to occur to them, until the reality of 'psychical' or telepathic transferences was proved irrespectively of hypnotism, and by examples where the possibility of bodily influence was excluded, either by the form of the experiment, or by distance; while the last of the three, though not equally outside the range of physiological conceptions, and though nowhere so strongly suggested as in the immediate facts of hypnotism, is so indefinite as to seem more like a phrase than an explanation;—what can science have to say about inscrutable nervous influences? The second hypothesis, moreover, undoubtedly offers a satisfactory account of many of the ordinary cases; while its adequacy has seemed almost guaranteed by the fact that not infrequently a person has succeeded in hypnotising *himself* by the purely mechanical process of fixing his eyes immovably on some near object.

As to the first hypothesis—that of direct 'psychical' agency—there is not much to detain us; simply because where physical processes are simultaneously brought to bear, psychical agency could never be *proved* to be the really effective element; while the fact that only one case[1] is on record of silent concentration, unaccompanied by any physical processes, producing hypnotisation in a person never previously entranced, leads us to suspect that its influence would at most be supplementary to that of the other means adopted. That it sometimes has an influence of this supplementary sort seems likely enough; for though with a fresh 'subject' there is no specially 'explosive spot'—the result of previous hypnotisation—to be affected, yet, if the working of the transferred idea be of the sort above suggested, we can readily conceive that a soporific impulse, strong enough at any rate to facilitate the passage into trance, might be 'psychically' conveyed to a sensitive recipient. It must be remembered that in discussions of that part of the hypnotic process which is peculiar to the 'subject' it has been the almost invariable rule to attach some distinct importance to mental elements—to eke out the supposed influence of physical immobility, or of an inward and upward squint, by that of attention or willingness to yield to the novel impulse; and for a believer in telepathy it is impossible to assume such mental elements as these without admitting the possibility at least that they may be reinforced,

[1] See MIND No. 46, p. 214, note.

if not actually initiated, by a psychical transference. And that is all, I think, that can at present be said.

But as regards the second and the third hypothesis, the issue can be made more definite; and it is really possible, I think, to fight it out to a conclusion. In any particular case, there either *is* or *is not* some specific physical influence at work, beyond the merely mechanical effect of the muscular processes involved. Now, obviously the question of the possibility of a specific physical influence of one organism on another is not necessarily confined to cases of hypnotism; but if in any shape whatever the reality of such an influence were made apparent, the difficulty of supposing it to be operative in hypnotism would practically vanish—just as the difficulty of conceiving hypnotisation at a distance vanishes when the reality of telepathy is recognised in other ranges of phenomena. I have a purpose in this remark; for, as it happens, some of the cases which to my mind have seemed the most suggestive of a specific physical influence of one human organism on another have not been connected with attempts to hypnotise, though the results have to a certain extent resembled those of hypnotism; and I am glad to have an opportunity of directing attention to these facts. They have all occurred in the course of what is known as the 'willing-game'—*i.e.*, under conditions which involved not only contact but concentrated desire on the 'willer's' part. The following are specimens of what the accounts that have reached me lead me to conclude has happened, in a more or less marked form, on many occasions when this game has been played. The *Lancet* for Oct. 11, 1884, thus reports a case related by Mr. Wherry, F.R.C.S., to the Cambridge Medical Society:—

"Mr. Wherry was sent for one evening to see an undergraduate who had become suddenly ill during the willing-game. It appeared that his friends had blindfolded him in the usual manner and were willing him to do some simple action, when suddenly he became weak in the knees and had to be helped to a seat. The handkerchief was removed at once, but the patient did not seem at all himself. He found him leaning against the mantelshelf, looking fixedly downwards in a dogged and morose attitude; he answered questions in monosyllables in a hesitating way, not stammering, but with a jerk and without expression. Usually, his friends said, his manners were natural and polite. The pupils were dilated, with no action to light, and his memory was a blank as to the details of the game. He was sent to bed, and when seen the next morning he was better; his pupils were normal and active to light, but his manner was still odd and his speech remarkable. When advised to leave Cambridge for a few days' change, he refused rudely, but was afterwards persuaded by his friends, and returned quite well."

On the same evening another medical witness, Mr. Deighton, reported that "in November, 1883, he was summoned in urgent haste to see an under-

graduate. He found him surrounded by his friends, who said they had been playing the willing-game, and that he had been blindfolded and willed; soon afterwards he became tottering on his legs and went into a state of convulsions. When seen he was tossing about on a sofa, with face slightly flushed, the movements of the arms and legs being most irregular, almost equally exaggerated on both sides. The muscles of the face and neck were least affected, but he spoke in a jerky way, and on putting out his tongue it was protruded and withdrawn suddenly. He was quite conscious, clear and collected, and said that he tried to prevent himself tossing about, but could not help it. The pupils acted to light and were natural in size. He was ordered a bromide draught and told to go to bed. The next morning he was quite well. He said he had spent a bad night, tossing about until 5 A.M. before he went to sleep, but there was now only an occasional twitching in the legs. He was of a nervous and excitable disposition, but never had fits, rheumatism, or chorea."

About the same time the Master of Selwyn College told me of a very similar incident which had happened among his own undergraduates. I will add one more case which I owe to Mr. F. H. Matthews, of Ivy Villa, Beulah Hill, Upper Norwood. The narrator is his sister, and the narrative has been fully confirmed by the lady in whose house the incident occurred, and also by Mr. Matthews's independent recollections of what his sister had told him.

"*February 14, 1886.*

"On the evening of Tuesday, December 8, 1885, we were playing the willing-game, and upon being asked to try, I left the room, whilst something was thought of. When I returned I was blindfolded, gave my right hand to Miss S., who was to lead me. Almost immediately I started forward, and went straight towards a young lady, and fell on my knees before her. Then, unfortunately, my thoughts returned to me, and I was conscious that I should kiss her. The knowledge, it seems, prevented my performing the action, and the next moment I fell on the floor with the full consciousness of what had happened to me." She lay for some minutes, unable to speak or move, and breathing with great difficulty. "When my dress was unfastened, the relief was so great that I broke into crying, and I could hear myself how loudly I sobbed, feeling even ashamed, yet not able to check myself." Revived with brandy, &c., she had a violent fit of trembling, which left her with an inclination to sleep. This, however, was resisted; and after forcing herself to walk upstairs, which she did with assistance, she returned to a normal state.

While this paper is passing through the press, a friend tells me that on the only occasion when she was ever "willed" in this way, she fainted and fell almost immediately on being touched.

Such results as these seem at any rate to deserve attention. Nothing like them has ever occurred in experiments in thought-transference proper, without contact; and it is very difficult to believe that what was regarded as a mere pastime should have produced a psychical state of tension and emotion sufficiently *sui generis* to account for the occur-

rence of such unique effects in healthy persons. May not something be said for seeking the cause of the unusual effect, or some part of it, in that part of the prior conditions which was itself unusual—that is to say, the continued physical contact of the 'subject' with a person who was in a state of concentrated expectancy? The cases are in one way more suggestive of specific influence than some of those of hypnogeny proper, just because the character of the *attouchements* in their mechanical aspect was so entirely simple and *un*special. When a person is seen pressing his 'subject's' head or body at carefully-defined spots,[1] or making passes over him in a methodical or elaborate fashion which professors of the art get money for teaching to others, one naturally concludes, if remarkable results follow, that the special place or mode of the manipulation has something to do with it; but the casual mode and variable place of the touch in these amateur diversions would lead us to suppose that the contact, if specialised at all, is specialised by the will-force which accompanies it, and in something other than its mechanical aspect.

But it is naturally in connexion with professedly hypnotic cases that the more conclusive proof of the inadequacy of the mechanical explanation must be sought—and may, I believe, be found, though to find it may require a somewhat wider outlook over the hypnotic field than has been always easy or possible for persons who have been chiefly occupied with their own experiments. This at any rate applies to a general argument which I have used before (MIND ix. 505-6), but which is worth repeating, if only that it may, if possible, be refuted. There clearly could not be a better *a fortiori* proof of a specific influence pertaining to the human organism than if it were shown to be specific in the further sense of pertaining to some organisms and not others. Now the mechanical hypnotic processes, by which it is customary to supplement the effect of immobility and a fixed gaze, should apparently be equally effective *whoever applies them;* whereas, as a matter of fact, different persons exhibit in this

[1] There are, however, professedly hypnotic cases which may very likely be entirely parallel in character to those just cited. Such a case was supplied to me by Mr. James Gudgeon, of Stowmarket, and completely confirmed in writing by two gentlemen who witnessed it. Mr. M., a tall and robust man, who had been ridiculing mesmerism and had defied Mr. Gudgeon to mesmerise him, in less than ten seconds after Mr. Gudgeon placed his hands on his head, "fell on the floor in a state of perfect and complete coma". This was followed by an attack of violent convulsions when water was thrown over him, and medical aid had to be sought.

matter very different degrees of efficiency. The processes themselves, however, need to be carefully distinguished. They consist for the most part of passes over the upper part of the person, and of pressure on the globe of the eye, or between the eyes, or on the vertex. It is common for the hypnotiser to combine the *passes* and the *pressures;* but the grounds of their efficacy are very different. The *pressures* seem undoubtedly to be mechanical in their action: they are applied to certain particular spots, and stimulate certain particular nervous *foci*, which presumably are intimately connected with the effect, and which physiologists therefore can label as 'hypnogenetic,' and then leave; for physiology does not profess to do more than assign to special localities and special tissues their proper functions. But the virtue of *passes* cannot be accounted for in any such fashion; for they touch no specialised springs in the organism. Yet passes were a mode of operation which physiologists found in possession of the field, identified, for many years before they took up the subject, with 'mesmerism' and theories of occult influence; and which therefore they could not avoid recognising and attempting to explain in some other way. The attempt has not been fortunate. It has consisted simply in treating passes as one of the forms of 'monotonous stimulation,' and in assuming the power of monotonous stimulation to produce hypnotic trance as an ultimate fact. I am inclined to question both the ultimate fact [1] and its application. Out of many possible forms of monotonous stimulation, only two, seemingly quite arbitrarily selected, have ever seemed to have any hypnogenetic efficacy—namely passes, a form which has very frequently been employed, and the ticking of a watch, a form which has comparatively rarely been employed. So far, then, from passes being explained by being called a form of monotonous stimulation, the burden of supporting the credit of monotonous stimulation, as a hypnogenetic agency, seems to fall almost entirely upon them. Yet an unprejudiced inspection of the ordinary procedure of passes will really make it seem absurd to find the peculiarity of their influence in the cause assigned—for the simple reason that there is often next to no monotony, and next to no stimulation, about them.

There seems in this matter to have been a confusion of things which are only superficially alike. Where *contact* is employed, as in gentle strokings and rubbings, the unaccus-

[1] On this question see the remarks of Mr. Myers, *Proceedings of the Society for Psychical Research*, pt. x. 145-8, with which I heartily concur.

tomed peripheral stimulation, produced by purely mechanical means, has at any rate a first claim to be considered the sufficient cause of the result that follows, whether that result be hypnotic trance or local anæsthesia or rigidity. Here, then (as in cases where actual pressure is applied to the supposed hypnogenetic spots), the rival or supplementary hypothesis of a more specific influence must depend mainly on the difference (above referred to) between the capacities of different manipulators, or of the same operator when working with concentration and attention and when working indifferently and mechanically.[1] But passes are very frequently made without any contact at all, or with very slight and irregular contact; so that the 'subject,' if he shut his eyes, might be unconscious that they were going on or that they were going on with any regularity. The stimulation, therefore, if anything, must be optical. But as the 'subject's' eyes are frequently fixed on something else,[2] and not on the operator, the fact that the arms of the latter are moving more or less rhythmically within his field of vision could hardly overpower his organs in any specific manner, even if the movement were uninterrupted and long continued. This, however, is rarely the case: as a rule the procedure conforms rather to the practice of Dr. Liébeault, who has probably hypnotised more persons in the course of his life than any other operator, and with whom (as Mr. Myers has justly observed) "the passes and touches made are brief and variable". On the whole, then, so far as mere passes without contact can be held to be effective, the fact is a positive and direct argument in favour of a specific physical influence.

So far, however, we have not got beyond cases where the 'subject's' own mental state is, or may be, one of the conditions involved. We may suspect that the importance of this condition has been sometimes exaggerated. It is very difficult, for instance, sweepingly to attribute the different

[1] See *Phantasms of the Living*, i. 88; and the experience of the French hypnotists whose accounts were epitomised in my last paper (MIND No. 46, pp. 218-19).

[2] This fixation of the eyes cannot itself be classed as one of the efficacious modes of monotonous stimulation, since the speciality of it, as Braid observed and taught, is the strain caused by the particular position of the eyeballs; and the concurrent stimulation of the retina by light is, for hypnogenetic purposes, a mere accident. It is worth noting that, as regards actual entrancement, the fact that the 'subject,' by his fixation of his eyes, may be distinctly contributing to his own hypnotisation, tends to mask the difference in the capacities of different operators, which (as we shall see a little later) is better displayed in local and therapeutical effects.

degrees of success or unsuccess of different operators in entrancing, stiffening, anæsthetising, &c., to the 'subject's' varying moods of belief or distrust; for it is not a monopoly of those who succeed as hypnotists to inspire the emotions of faith and expectation, which, before their success, they themselves are often far from feeling; while those very emotions have often been brought to bear on other operators, or other proposed means of alleviation, without having any result. Still, complete exclusion of the subjective factor will no doubt add indefinitely to the force of the evidence. The exclusion will tie us down to experiments of very special types. As a rule, of course, contact must be wholly avoided; for it could hardly fail to reveal to the 'subject' what is being attempted. There is, however, one class of persons with whom this objection does not apply—namely, very young children; aud I will begin with evidence drawn from that class.

As usual, one has to deplore the lack of exhaustive experiments. The very last quality that competent persons can be expected to bring to bear on any hypothesis connected in their eyes with the mesmeric heresy, is patience; and patience is undoubtedly required to devote ten minutes of laying-on of hands to each of a long series of suffering infants. As far as I know, Dr. Liébeault, of Nancy, is the only well-known practitioner who has taken this amount of pains;[1] and his conclusions are the more valuable in that they are opposed to the view maintained by him previously for many years—that the therapeutical influence of hypnotism is always and wholly a matter of suggestion and imagination. In his *Étude sur le Zoomagnétisme* (Paris, Masson, 1883), he describes experiments with 46 sick children of 4 years old and under (the large majority being under 3), in all of which some amelioration, and in most very distinct amelioration, followed his manipulation. The cases are not all of a crucial kind, the ailment having simply been diarrhœa or failure of appetite, which might have been about to mend in any case. But the cumulative force of the record cannot be denied; and some of the individual cases are striking enough. One interesting feature was the frequent production of sleep, either during the contact or after it

[1] Dr. Liébeault attributes the idea of his own experiments to information of similar successes which he received from a M. Longpretz of Liège; and in part also to the account given long ago by Dupotet (without sufficient detail for scientific purposes) of movements and contractions which he induced in sleeping children by movements of his own hand in proximity to their bodies, in spite often of the intervention of the bed-clothes.

at unusual times, or for an unusual length of time. Thus, one child, aged 3½, on returning home, slept for 17 hours consecutively, and even then did not wake spontaneously. Another, aged 1 year, had been crying day and night for 4 weeks, with snatches of sleep of only 5 or 6 minutes, owing to obstinate colic and constipation. "During one of her short sleeps, and consequently without her consciousness, I prolonged this condition, keeping my hands on her for 20 minutes, till she showed signs of waking. From that moment the crying stopped, as if by magic; she slept during a great part of the night, and when she was brought next day, she was quiet, and the constipation had been relieved." I have not space for further citations; but, as to the results, it will be noted that it at least sufficed to bring a man whom none that know him will accuse of pretension or exaggeration, and who had long pursued the path of orthodoxy, to a candid confession of the belief that "the organic changes produced must have been due to a transmitted nervous influence". He considers the alternative hypothesis, that the effects were due to the heat of his hands; but not only had the children been kept warm—and were probably as warm as his hands when he touched them—but, as he remarks, they "had often remained for long hours in their mothers' hands, without any amelioration". Thus the results, if they prove specific influence at all, would go to prove an influence which is specific not only in the sense of being peculiar to living organisms, but in the further sense of appertaining to particular individuals.

To pass now to experiments with older persons, where contact must be avoided. These could hardly ever take the ordinary form of entrancement; for it would be difficult so to arrange conditions that passes should be continuously made near a person's face without his knowledge and consent. The *waking* from trance can, no doubt, be carried out in this manner; and I have myself on a good many occasions seen a 'subject' awakened by gentle upward passes, not near enough to his face or head, one would have thought, to produce any sensible current of air.[1] But by far the most

[1] Berger and Gscheidlen have described the transformation of natural into hypnotic sleep by the holding the hand near the sleeper's head. Gscheidlen professes to have succeeded in 8 cases out of 15—the test of the change of state being that the sleeper no longer reacted to the tickling of the soles of his feet (see the *Deutsche Medicinishe Wochenschrift* for 1880, pp. 92-3, and Malten's *Der magnetische Schlaf*, p. 13). Berger, however, says that warm metal plates produced the same effect—one of the startling statements, too numerous in the history of hypnotism, which seem never to

crucial cases known to me have been of the *local* sort—specific effects produced, without entrancement, in special parts of the body, which the 'subject' did not know was going to be operated on. I will give a brief outline of these experiments, which have been carried out with three 'subjects,'—the hypnotiser in every case being a gentleman who has for some years been acting as my secretary and has my complete confidence—Mr. G. A. Smith.[1]

The 'subject' was made to put his arm through a thick screen, extending high above his head, and to spread his ten fingers on a table in front of him. The fingers were thus completely concealed from his view, and exceedingly quiet passes were made (or the operator's fingers were simply held) an inch or two over one and another of them, according to my selection—with the result that in a very large majority of cases the finger so treated, and that finger alone, became rigid, and insensible to extremely severe treatment in the way of stabs, burns, and electric shocks. From my knowledge of the 'subjects,' and of the circumstances, I regard simulation as practically out of the question. But this is not really important, for the hypothesis of simulation has no application to the frequent cases where the rigidity was tested *before* the anæsthesia. The 'subject' was told to double his fist; and no desire to deceive could have taught him which particular one of his ten digits was to remain recalcitrant.

There seem to be only two possible ways in which the 'subject's' finger could have felt the proximity of Mr. Smith's hand—(1) by currents of air due to the passes; and (2) by a sense of warmth—Mr. Smith's hand being warmer than the surrounding air. Such perception would have involved very decided hyperæsthesia in persons with tolerably pachydermatous hands, who (it must be remembered) were in a normal not a hypnotic state. I made trials once with three co-experimenters and none of us could in the slightest degree detect similar passes made over our own fingers; and the 'subjects' professed a similar ignorance. Still, the possibility of hyperæsthesia needed to be faced. In many of the earlier trials, to prevent the detection of Mr.

have been confirmed by other observers. Berger's account of the stiffening of a sleeping person's arm by passes closely resembles a case which I have observed (*Proceedings of the S.P.R.*, vol. i., pp. 259-60; but in Berger's case the effect was produced through the clothes).

[1] For a fuller account of the earlier trials, see *Proceedings of the S.P.R.*, vol. i., pp. 257-60; vol. ii., pp. 201-5; vol. iii., pp. 543-9. The later cases are described here for the first time.

Smith's passes by currents of air, someone else made similar and simultaneous passes over another finger. But it might still be objected that some imperceptible difference in the manner of making the passes produced differences in the currents of air; and a far better method which I have employed in 20 later trials (as well as in a few of the earlier ones) is to dispense with passes altogether. Mr. Smith has held his hand perfectly still about a couple of inches over the selected finger; and the diminution of sensibility, though less in degree than when passes were made, has in every case (with possibly one exception) been quite unmistakable, while in nearly all the cases the rigidity has been sufficient to prevent the finger being quickly flexed.[1] Here, then, the only means of direct perception left open seems to be warmth. Perception by this means would involve hyperæsthesia in an extreme degree; and in this connexion I may mention that a scientific friend at Cambridge (whose results will in time, I trust, be published) tells me that he has produced similar effects, under similar conditions, with two sheets of glass between his hand and that of the 'subject'. But I believe that I have sufficiently guarded against the conveyance of information through warmth by holding my own hand, at the same distance as Mr. Smith's, over another of the 'subject's' fingers. After we have been for some time together in a warm room, Mr. Smith's hand and mine do not perceptibly differ in temperature; yet mine never produced any effect on the 'subject'.[2] Another fact of great significance is that I have now got both the 'subjects' on whom these recent experiments have been made to attend to their sensations during the process. They used to profess unconsciousness of any change whatever; but they are now able to detect which finger has been the subject of experiment by what they describe as a slight feeling of *cold*. That this should be the direct effect of the proximity of someone else's warm hand seems inconceivable, especially since the feeling lasts after the hand is removed; but it is perfectly easy to account for as a secondary result of the increasing numbness and loss of normal sensibility. It should be noted further that the effect was removed in just the same manner—that is to say, the proximity of Mr.

[1] In two cases the corresponding finger on the other hand, and in a third case an adjacent finger, was also slightly affected.

[2] I propose in some future experiments to apply the same test when the temperature of Mr. Smith's and my hands has been distinctly lowered and raised by immersion in iced and heated water.

Smith's hand was effective on a finger which had just proved insensitive to pretty vigorous pricks, and would not therefore be likely to be extraordinarily hypersensitive to warmth.

Now here what hypotheses are left as alternatives to that of direct influence? May the idea of the selected finger be conveyed to some 'unconscious' part of the 'subject's' mind by thought-transference, and there produce an expectation of anæsthesia and rigidity which works out the appropriate results? This seems excluded by the fact that the physical proximity of Mr. Smith's hand proves to be a necessary condition: the effects do not follow if he simply stands and *wills* their occurrence. Consequently the 'unconscious' perception will have to include the discerning of the approach or proximity of Mr Smith's hand; and this, combined with the certainty of the results and the fact that the 'subjects' have shown little or no aptitude for thought-transference in other forms, is a strong reason for supposing the mode of communication to be physical, not psychical.[1] The alternative, then, to the hypothesis of a direct influence seems to be that an 'unconscious' discernment through the finger's ordinary sensory apparatus is followed by 'unconscious' expectation of particular physiological results, which in turn is followed by those results. Of this hypothesis I can only say that it seems to me extravagantly improbable, for three reasons. (1) It attributes to 'unconscious' expectation an effect which conscious expectation cannot bring about. I have on a good many occasions led the 'subjects' to believe that a particular finger was being operated on, when it was not; but no change in its condition ever ensued. Still, I would not press this particular point too far; as we are not justified in assuming an exact similarity between the capacities of the conscious and 'unconscious' divisions of the mind. A more serious objection is (2) that even in the 'unconscious' mind expectations cannot form without some grounds; and before confidence was established by experience, the 'subjects' were much more likely to expect that they *would* feel the very sharp inflictions to which their fingers were submitted than that they would *not*. This specially applies to a female 'subject' of very nervous temperament, who had no acquaintance with the physical phenomena of hypnotism, and who was ready to shriek at the very idea of a prick on

[1] The particular sense in which I use these words, and the word 'unconscious,' was explained in my last paper.

her fingers.[1] (3) The initial supposition, that a person whose conscious self is unaware of certain faint stimuli is 'unconsciously' hyperæsthetic to those very stimuli seems to me wholly unsupported and extremely dubious. I conclude, therefore, that the balance of probability is greatly in favour of a direct physical influence in which the ordinary channels of sense are not concerned. Whether this conclusion be right or wrong, I earnestly hope that the experiments may be widely repeated by persons who have proved themselves effective hypnotisers; for no conceivable explanation of the facts could deprive them of their exceptional interest.

There is one other alleged type of effect produced by physical proximity, without sensory communication, which deserves mention, though it has not yet, I think, been quite conclusively tested. Dr. Babinski, of the Salpêtrière, believes himself, and is believed by Dr. Charcot and other authorities, to have established the fact that a hysterical affection, produced in one 'subject' by hypnotic suggestion, can be transferred to another 'subject,' not in contact with the first, under the influence of a neighbouring magnet. The French *savants* do not seem completely aware how absolutely different such a phenomenon would be from those to which they compare it—the widely-alleged effect of a magnet in transferring hysterical affections from one side of the body to the other; but this is unimportant provided only they prove their facts. The objection to some, at any rate, of their experiments is that sufficient account does not seem to have been taken of the acuteness and cunning which hysterical women may bring to bear in some well-defined channel, while ostensibly in a state of hypnotic lethargy and inattention; without intending to deceive in any way involving real responsibility, such persons may still be quite capable of detecting what the expected effects are, and of producing them by clever collusion and simulation. This, however, is now becoming better realised; and I can vouch for the striking result of one trial, in which Dr. Babinski was good enough to allow Mr. Myers and myself to arrange the conditions. The two 'subjects' were placed in two rooms separated by a thick door; and a strong contracture of the foot produced in one of them certainly reappeared in the other. The only flaw was that the woman first affected made an exclamation in which the word *pied* occurred; but she did not speak loud, and the remark was quite inaudible

[1] I was only able to have half a dozen trials with this 'subject,' as her fingers, when stabbed, bled to an extent which made me fear that they would cause her subsequent pain or annoyance.

to normal ears on the other side of the door, where a good deal of noise was going on.

And now a final word as to what the nature of the specific influence in these various results can be supposed to be. If it exists, as a property of living tissue, there can be no doubt, I think, that the tissue concerned is that of the nerves. This would be a probable surmise from the analogy of electrical induction, and from the affinity supposed to exist between nervous and electric currents—an affinity which would be manifest, even apart from the electrical properties of nervous currents, in the mere fact that the nerves are the only part of the body through which anything of at all the nature of a current (in the physical sense) passes. But a stronger argument is that immediate dependence of the influence on the brain, which is strongly suggested by nearly all the cases. The proximity of Mr. Smith's hand to the 'subject's' finger proved as ineffective, unless his attention was likewise concentrated, as his attention and 'will' had been without the aid of his hand; and, moreover, as I have said, exactly the same proximity of the hand which *produced* the effect also *removed* it—the only change being in the operator's intention. Similarly in the 'willing-game' cases, the agent's concentration seemed to be the express condition of the curious effect; and whether or not the same can be stated of Dr. Liébeault's therapeutical successes, it has at any rate been widely observed by other hypnotisers. It would seem, therefore, that the nerve-currents must receive their specific character, in part at any rate, from the character of the cerebration which accompanies this concentration; and, if so, then the influence is clearly *physiological* in character, not merely in the sense of belonging to a living tissue as such, but in the sense of being evoked at special moments by a special form of vital action. It has no analogy, for instance, to the alleged effects of particular substances, such as metals, applied to the human body; nor is it due to a material emanation with peculiar properties, such as would come into play if the effect were produced through the organ of smell. Though finding its nearest analogue in induced electric currents, and though best, perhaps, described as nervous induction, it is essentially vital and *sui generis*.

This very general statement is all, I think, that can be advanced with any positiveness. As soon as we try to analyse the processes further, our means fail. The cases described, though they agree in pointing to the power of one organism specifically to affect another, are puzzlingly dif-

ferent in their details. Dr. Liébeault considered that the nervous influence which he brought to bear "re-established the physiological functioning" of his 'subject's' organs. But how little apparent relation such a result has to the hysterical disturbances of the willing-game, or to the stiffening and anæsthetising of a young man's fingers! As to all difficulties of this sort, it seems enough for the present to remark that they ought not to be regarded as affecting in the slightest degree the general question as to cause and effect. Inasmuch as our ignorance concerning the details of the nervous governance of the human organism is very nearly complete in respect of processes where the fact of the governance is universally admitted, the absence of a satisfactory physiological account of the intermediate stages ought not to weigh a feather in the decision whether the ostensible affection of one organism in some unknown way by the proximity of another is demonstrated or demonstrable by evidence. That, even if the general fact were incontrovertibly established, its various modes of manifestation and their complete physiological history should remain obscure is exactly what we should *a priori* expect. I will only add that cases of the Salpêtrière type, and cases of a sanative influence produced by an operator who is himself in vigorous health, would accord with the view advanced in my last paper as to the transmission (supposing it to have any physical basis) of telepathic impressions,—namely, that the process resembles those where a physical force, acting by vibrations through a medium, *reproduces* itself at a distance in its original form, as in the case of sympathetic tuning-forks or induced magnetism. The resemblance does not hold, however, in the other results—*e.g.*, in the finger-experiments, where the hand operated on assumes a quite different condition from that of the hand that operates; and so far as the evidence supports a definite view, it points to another or a further process than the sympathetic or simply reproductive, as involved in many of the cases of supersensory transference where the organisms concerned are in close proximity to one another. I cannot forecast whether science will ever address itself with success to such problems as these. I should be content if any of my readers were led to regard as within the possibility of scientific acceptance the broad fact that certain supersensory and non-mechanical transferences take place which belong to the domain of physical and physiological, and not merely of psychical, research. Such transferences stand a better chance of consideration as examples of 'nervous induction' than as a branch of telepathy.

V.—DISCUSSION.

SUBJECT AND OBJECT IN PSYCHOLOGY.[1]

By Shadworth H. Hodgson.

The question which I am commissioned to bring before you this evening is—what, if anything, is designated by the terms *Subject* and *Object* in psychology. The meaning of the terms in psychology is what is sought; a question to be answered for the use and behoof of psychology. Nevertheless its settlement will require us to have recourse to philosophical considerations.

There are two reasons for this: first, because the use and meaning of the terms in psychology are commonly mixed up and confused with their use and meaning in philosophy; and secondly, because the terms are originally philosophical, by which I mean, that they belong primarily to that group of questions which relates to the nature and reality of Existence and the knowledge which we have of it, the nature and meaning of the term *Existence* itself.

I may also be allowed to remark, that many of the most perplexing puzzles and differences of opinion arise from insufficient demarcation of the limits and boundaries of different branches of thought, and that they would often be put in a fair way of solution in the one case, and of agreement between disputants in the other, if these limits and boundaries were settled, and the terms in dispute could thus be referred to their proper niche in the World of Thought.

Of this the terms *Subject* and *Object* are a striking instance. They are often used as if they were names of two sorts of supreme or ultimate entities, or even more specifically as simple equivalents of the terms Mind and Matter. This, in my view, is robbing philosophy, without enriching, but rather thereby embarrassing, psychology.

The beginning may perhaps best be made by referring to the well-known distinction of Descartes, between *cogitatio* and *res cogitans*. The first great question for psychology is—*What is* the *res cogitans? This*, whatever it be, whether material or immaterial, physical or non-physical, is the *Subject* in psychology.

Now this, the Subject, is opposed to *cogitatio*, its own *conscious* action or functioning, its own functioning so far as that functioning is consciousness, that is, to the modes or series of states of consciousness, which attend on its action. But these are not its *Object*. The Subject in psychology is opposed, not to its object,

[1] A Paper read to initiate a discussion, Tuesday, March 29, 1887.

but to its product, its concomitant and dependent consciousness, its *cogitatio*.

What then is the *Object?* Here we come to the distinction which is in question this evening; and this distinction is a distinction of *philosophy*. *Object* means—object of thought, of perception, of imagination, memory, and so on, or briefly of consciousness, of Descartes' *cogitatio*. The *rôle* of the Subject is here altered. It is *cogitatio* which is subjective to its objects; they are objects *of it*. The *res cogitans*, the Subject in psychology, is an object, among others, in philosophy. And as already said, the question is still open, whether this object of thought, the Subject in psychology, is material or immaterial, an organism or a soul.

Observe the confusion which is thus brought to light in the conflicting meanings of the term *Subject*, the reversal of the part which it plays, first as Subject of its own function, consciousness, then as Subject of the things known by means of its function, *itself included*. It appears to exist at a deeper depth in subjectivity than consciousness, *cogitatio*, itself, seeing that this depends upon and accompanies its action; it seems to be the source of consciousness, the source of itself as known to itself in and by consciousness; the perennially active but necessarily hidden fountain which throws up, and as it were *objectifies itself* in the form of consciousness and all its content, all its objects. The psychological view of the Subject, when not corrected by the philosophical distinction of Subject and Object, thus leads directly to a conception which is essentially the same as that of the Transcendental Idealism which sprang from Kant, and which has ever since deluged Germany.

But it is not with the results of this neglect of a philosophical distinction that we have now to do. We are concerned to-night rather with its cause than its consequences—how more particularly is the confusion brought about; at what point in the chain of thought does the departure from logical rigour occur, which leads ultimately to the monstrosity of the self-creation of the Subject? Now, the precise flaw, or point of divergence from logic, at least as it seems to me, is this. The Subject in psychology is carelessly and inaccurately identified with the *Ego*, and moreover with the popular or unanalysed conception of the *Ego*, as it appears in common parlance. We always think of our self as having something, doing something, or aware of something; as possessing faculties; as willing, thinking or feeling. This identification is clearly seen in Descartes' argument, *cogito ergo sum*—I *think*, therefore I *am*—the word *am* meaning, with him, am a soul or Subject, a *res cogitans*. But what is the fact, what is the truth about this inference? Let us see.

The *Ego*, the "I," does not belong *primarily* to psychology at all. Its meaning, its characteristic, is derived entirely from *cogitatio;* it is that feature of *unity* of consciousness which accom-

panies, or is bound up with, all distinct consciousness whatever. It is an inference, an *ergo*, that consciousness with its unity requires a Subject, a *res cogitans*, to sustain it. But this inference cannot be an immediate inference, a *consequentia immediata*, though Descartes himself, no doubt, supposed that it was so. (See MIND i. 568-70.)

The only immediate inference from *I think* would be—therefore *my thought exists*. That *cogitatio* requires a *res cogitans*, or my thought a "me," to possess it or exercise it,—this inference is derived from something in the content of the *cogitatio* over and above the mere fact that *cogitatio* takes place. The perception or idea of a *res cogitans* exercising or possessing the *cogitatio* is no necessary or universal feature of *cogitatio* simply. It belongs to the popular, pre-philosophic, and unanalysed conception of the *Ego*, which is the fruit of long association hardened into habit.

As M. Fouillée well puts it, in *La Liberté et le Déterminisme* (2nd ed., p. 82): "Ce qu'il y a de certain dans le *je pense*, c'est le *penser*, ce n'est pas le *je*. Le vrai et seul evident principe est le suivant: *la pensée est; il y a de la pensée, il y a de l'être, il y a de la conscience.*" This part of the content of the *cogito* is the only thing warranted by immediate inference, the existence of my consciousness, of my *cogitatio* itself. And why is this warranted? Because in consciousness or *cogitatio* the consciousness or *cogitatio* is immediately perceived, is its own object or content, every moment of it, as it becomes past, becoming also content or object of the then passing or present moment; of which again, in the next moment, the same thing will be true. Then it is that, from the experiential point of view, we say that it exists. (See MIND ii. 128-30.)

Here, in my opinion, is the precise source of the fallacy. First, the *Ego*, the "I," is identified, unanalysed, with the Subject in psychology. And secondly, the *Ego*, the "I," is in popular, pre-philosophic, that is, pre-analytic thought, a double-mixed, or two-fold something. It is agent and action, conscious agent and consciousness, in one. This popular, pre-philosophic, and pre-analytic conception of the "I" is carried over *unanalysed* into psychology, when the "I" is identified with the Subject. Whereas logically, what ought to be carried over into psychology under the name of the Subject,—of course *after* analysis instituted,—is the *agent* or *agency* in the popular conception of the "I," *minus* the function, the *cogitatio*, the consciousness. The consciousness is opposed properly to its objects, and the distinction of Subject and Object, meaning *knowing* and *that which is known*, remains with philosophy, the institutor of the analysis. The idea of thought, *cogitatio*, consciousness, as well as that of the Subject, evolving its objects out of itself is then seen to be utterly baseless and unwarranted, so far as experience goes.

It will repay us to compare Kant's proceeding in this matter

with that of Descartes. Kant sees plainly enough (*K.d. r.V.* Note to the "Widerlegung des Mendelssohn'schen Beweises der Beharrlichkeit der Seele," pp. 308-9 of Hartenstein's edit. of 1853) both that the *Ich denke*, Descartes' *cogito*, expresses an experiential fact, is what he calls an "*empirischer Satz*," and also that it does not carry with it the existence of the *res cogitans* as an immediate inference. In fact, to warrant that inference two things must have been perceived immediately and together, first, the self-consciousness, the *cogitatio*, and second, the fact that self is an agent; and this in the simplest moments of consciousness, that is to say, in consciousness simply as such, is impossible.

It becomes possible to embrace these things in a single moment or glance of consciousness, *uno intuitu*, only when we have previously formed and become familiar with the ideas of *agent* and *agency*, or *action*. And this in consciousness simply as such is impossible, unless we suppose that consciousness exists and works in certain forms, nameable as ideas or conceptions, with which it is furnished and prepared simply as consciousness, or without which it would not *be* consciousness, *cogitatio*, at all. *On this assumption* the existence of the *Ego* as *res cogitans* would follow immediately from the content of the *cogitatio* itself. But it does not follow immediately from the content of the *cogitatio* alone, without this assumption, because in the content of consciousness, taken simply as such, we are *not* conscious of any such forms, ideas or conceptions. In short, Descartes mistakes a comparatively late and derived content of consciousness for an original and necessary one.

What course, then, does Kant take? He straightway invents a faculty, the *Verstand*, which shall be furnished with certain *a priori* forms of thought, the Categories, and which, in conjunction with another faculty, the *Anschauung*, shall have the second of the two perceptions mentioned above; that is, shall be aware of its own action, as an action, upon the sense-matter furnished to it by the *Anschauung*, and thus warrant an assertion similar to Descartes' inference, *ergo sum*. These two faculties belong, by his hypothesis, to a higher unity, a Transcendent Subject, and thus the fact of reality in the Subject is upheld, as with Descartes, but only by means of the transcendental hypothesis, and, in the last resort, only in reference to the Transcendent Subject. (See *K. d. r.V.* "Transcendentale Deduction der Verstandesbegriffe," in 2nd edition, particularly § 16 and Explanation appended to § 24, pp. 123 and 135-6 in Hartenstein's edition of 1853.)

Descartes erred, not indeed in supposing that some immediate inference was warranted by the *cogito*, but in changing the sense of the *Ego* in passing from premiss to conclusion, owing to his defective analysis of the *cogito*. The word "I" is simply designative in the premiss, *cogito*, a popular way of expressing the fact of *cogitatio*. In the conclusion, *ergo sum*, the "I" becomes *res*

cogitans, a very different thing. Kant, instead of giving a direct and independent analysis of the *cogito*, the experiential fact upon which everything hinges, expends his ingenuity in inventing conditions of the *cogito*, conditions which make *cogitatio* possible, and analysing *them;* that is, in inventing a system of hypothetical faculties, belonging to a hypothetical Transcendent Subject, the combined action of which shall have the *ergo sum* as their apparent or phenomenal result, a result which shall be explicable only as a manifestation of the supposed noumenal and transcendent reality. This surely is a false direction in philosophy; it is psychology superseding philosophy by making an unphilosophical assumption.

Common both to Descartes and Kant is the purely *a priori* assumption, that a simple state of consciousness not only announces its own existence, but announces and must announce the existence of its cause, a conscious being. And by an *a priori* assumption I mean one drawn from notions prior to philosophy, the fund of notions which are the stock-in-trade of uncorrected common sense. Both philosophers alike are penetrated, dominated, saturated, by this totally unfounded assumption; an assumption, be it noted, which Kant spent the whole latter half of his life in elaborating into a theory, the Critical and Transcendental Philosophy.

The truth is that the notion of the *Ego* as a *res cogitans*, a real agent, is a derived notion, but not necessarily on that account a false one, derived from the content of the *cogitatio*. If that be so, then the true business of philosophy is to trace the steps by which it has been first derived, and ultimately established, as a familiar and indubitable notion of common sense. Everything in philosophy depends upon whether you assume this notion *a priori*, or deduce it from experience. The kindred errors, as I needs must call them, of Empiricists and Transcendentalists alike flow from making an assumption of it. The former, in place of the simple fact of Reflective Perception, *cogitatio*, substitute a Mind in presence of external things, and the latter a Thinking Subject constructing and constituting them. It is true that, at the beginning of the inquiry, *cogitatio* must be taken simply as a fact, with its genesis or possibility as yet unexplained, and all questions as to it postponed. It is better to postpone the question than to answer it at once by an assumption supposed to be indubitable. And I think it is obvious, that assumptions like these must vitiate the whole course of the speculations founded on them, to say nothing of the contradictory character of the assumptions to one another.

In reality philosophy and psychology alike spring out of ordinary pre-philosophic experience, by applying analysis to its phenomena; and they divide between them its goods, the partition being based on the analysis. Not that the goods, the phenomena of common sense, when analysed, are done with, out

of court, or valueless. Far from it. They remain as the means whereby to test the accuracy and exhaustiveness of the analysis. Knowledge is book-keeping, so to speak, by *treble entry*—common sense, science and philosophy. The accounts of all three must tally. There are no other lines of thought but these three, their modes and combinations of modes. The common-sense ideas of agent and agency, for instance, or those of reality and the real, are at once a standing challenge and a standing test of philosophic and scientific analysis. Either philosophy or science, or both, have to give back to common sense these which are its own ideas analysed. The ideas and their analysis are but different ways of regarding one and the same common universe, the very existence of which, as their common object, is known to us in no other way besides the three mentioned. The analysis of an idea means the constituent ideas, parts or elements composing it, with the manner of their combination. If there is anything in the idea which is left out and unaccounted for, neither explained as an illusion, nor its equivalent given in the analysis, its place must be marked as unfilled, the idea left to that extent a blank, and the required element acknowledged as unknown. Agreement between the three lines of thought, with regard to all ideas whatever, is the final end proposed by the investigation.

The common-sense idea "I" is no exception to this law, and some attempt at analysing it has been made above. According to that analysis, whenever the words *Ego* or "I" are used either in philosophy or in psychology—as of course they must continually be, seeing that in no discussion can we get on without them—it should be remembered that they express a *mixed* being; namely, unity of and in consciousness *plus* that part of the operation of the Subject which is required to sustain it. Now a part is not the same thing as the whole, and the operative agency in the *Ego* is not the whole Subject. It is probable that many operations of the Subject never attain to be accompanied by distinct consciousness at all. And to determine what particular portion, or what particular operation, of the Subject is that which is accompanied by the perception of self, is perhaps one of the most important and difficult problems in psychology.

But it is time to return to our main question. The *Ego* is an agent so far forth as it is part of the active operation of the psychological Subject; and the *Ego* has objects so far forth as it is itself part of *cogitatio* or consciousness.

But no argument for the immateriality of the Subject can be drawn from the fact, that the *Ego*, taken *per se* and primarily, is a mere unity of and in consciousness, that is, has that sort of immateriality which consciousness, the world of thought, has in contrast to *res existentes*, the world of reality, which is commonly thought of as material. If the Subject is immaterial, its immateriality must be of another kind from this, must be the immateriality of an agent, and not that of a state of consciousness.

Nor is this distinction between the *Ego* taken *per se* and the Subject an idle subtilty of speculation. One important result at any rate it possesses, which is to serve as a basis or fundamental *aperçu*, rendering possible the solution of that puzzling problem in psychology, the phenomenon of dual and even plural personality, one personality alternating with others in the consciousness of one and the same psychological individual; since the *Ego* taken *per se*, the unity of and in consciousness, is plainly transferable to any train or trains of association which may happen, through disease or other causes, to have exclusive possession of the activities of the Subject at any one time.

Finally, the Subject in psychology,—whether it be immaterial soul (or mind) or material organism, — when referred to the philosophical distinction of Subject and Object, belongs to the Object, not the Subject, half of that distinction. It is *that* object which is inferred as the proximate real condition of subjectivity, *cogitatio*, or consciousness. The term *Object* on the other hand has, so far as I can see, no technical meaning or definition in psychology at all; supposing always that psychology keeps strictly to its proper province, which is that of investigating the genesis, government and behaviour of consciousness, as a function of an individual existent Subject, without trespassing on questions of philosophy concerning the nature and reality of existents generally, as evidenced by consciousness. The uses to which it is most frequently put in psychology are supplied and satisfied by the term *real condition* of perceptions, thoughts, presentations, representations, sensations, emotions, and so on; meaning those realities and real events, not included in the Subject, upon the interaction of which with the activities of the Subject corresponding states of the Subject's consciousness are conditioned to arise.

RECENT DISCUSSION ON THE MUSCULAR SENSE.

By W. Leslie Mackenzie.

Recent discussion on the muscular sense involves four questions: (1) Is there muscular sense at all, or sensibility specifically muscular? (2) What is the nervous mechanism attending muscular feelings, and what relation has it to consciousness? (3) In what parts of the central nervous system are muscular feelings represented? (4) How do the answers to these questions affect the psychological antithesis of movement and sensation?

(1) *Is there a Muscular Sense?* This is not a superfluous question. Dr. Ferrier many times in his last edition of *Functions of the Brain* speaks of the "so-called" muscular sense, meaning, as he elsewhere tells us, that such a "complex assemblage of impressions of different categories" has no claim to the title of "sense". Prof. W. James and others hold a like view. Per-

haps the chief objection to "sense," strictly taken, arises from the doctrine of the "out-going current" commonly associated with "muscular sense". This at least is the impression one gets from reading the recent discussion at the Neurological Society, where the chief dividing question was as to "in-going" or "out-going" current. But clearly one may ask if there is a sensibility of muscle, without committing oneself to any doctrine of "in-going" or "out-going" nervous current, and this M. Beaunis (*Revue Philosophique*, March, 1887) has done in an ingenious experiment.

To determine whether the sensibility called muscular is to be attributed to the muscles themselves or to the skin and neighbouring parts, M. Beaunis experimented on the larynx. The movements of the vocal cords in singing are remarkable for their delicacy and precision, and differences of tension in these cords reckoned by fractions of a millimetre influence in a perceptible way the accuracy of the sound. There are two possible sources of guiding sensibility: first, the mucous membrane of the larynx; second, the muscles. These M. Beaunis proposed to separate by paralysing the sensibility of the mucous membrane. "*If the voice remain accurate*, then the sensibility of the mucous membrane does not regulate the differences in tension of the vocal cords. These differences, therefore, can be regulated only by the muscles of the cords. Therefore there is muscular sensibility. *If the voice become false* . . . then the sensibility of the mucous membrane intervenes; there is no true muscular sensibility; the muscular sense does not exist. Finally, it might happen that the voice, without becoming altogether false, showed a certain change, more or less marked, in accuracy. In this case both would be involved at the same time in graduating the tension of the cords —the sensibility of the mucous membrane as well as the muscular sensibility." To paralyse the laryngeal mucous membrane M. Beaunis employed cocaïn. He secured as a subject a practised singer, familiar with laryngoscopic examination and intelligent enough to analyse his feelings and grasp the import of the experiment. He first made the subject—a tenor—sing, without accompaniment, a pretty long air of moderate difficulty; the emission of sound was good, the voice accurate and of good quality. He next applied to the vocal cords with a brush a solution of cocaïn. The subject then sang the same air, first three minutes, then eight minutes, after the application of the cocaïn. The singing was less satisfactory than at first; the quality was less mellow, the sound less pure. But in accuracy the voice was the same. Laryngoscopic examination at this stage showed the edges of the true vocal cords pale, and on them some small masses of mucus. When the action of the cocaïn was exhausted, M. Beaunis applied a solution stronger than is usually applied to the larynx. With this the lips of the glottis became pale, for the small vessels of the mucous membrane were contracted. The subject then began the same air again, first three minutes, then six minutes, after the

application. The result was the same as before, a little more accentuated perhaps, but always more from the point of view of sweetness of quality than of accuracy in pitch.

M. Beaunis then made his subject go through some vocal exercises—sustaining a long note and trilling. The subject was able to sustain a note for twenty seconds, just as in his normal condition, and his trilling after the first effort was good. Laryngoscopic examination at this stage showed the edges of the glottis pale, the rest of the mucous membrane a little red. The glottis and the posterior surface of the epiglottis were not sensitive to contact. Finally, on testing with the tuning-fork, M. Beaunis found that the voice had remained true all through the experiment.

From this series of experiments M. Beaunis infers that there is a true sensibility of muscle, independent of skin and surrounding tissues. One possible error he points out, namely, that the physical change produced in the mucous membrane by the cocaïn may act mechanically on the muscles, and in a certain measure give rise to contractions in them.

This experiment, provided it be repeated and corroborated, should go far to settle the specific sensibility of muscle. The larynx for delicacy of indication one may compare to the myographs of the physiological laboratories. Nowhere else among voluntary muscles can one isolate so readily the muscular and cutaneous, resistance and pressure. If the experiments of M. Beaunis should be confirmed, there is no further need to speak of muscular sense "so-called"; we may regard the specific sensibility of muscle as demonstrated.

(2) *The Nervous Mechanism involved, and its relation to Consciousness.* This was the chief dividing question at the meeting of the Neurological Society, December, 1886, so fully reported in *Brain*, March, 1887. One cannot say that the discussion, headed by Dr. Bastian's long and carefully elaborated paper, has forwarded much our knowledge either of fact or of theory. There is too much misunderstanding as to the precise point in dispute, and there is too little separating of questions. Surely there is a lack of thoroughness somewhere when Dr. Hughlings Jackson can complain that cases hitherto regarded as obviously on one side are now quoted on the other. Such misunderstanding ought not to be possible among scientific men. The misunderstanding arises chiefly on the interpretation of cases, the distinction of sensory and motor, and the implication of consciousness and of will.

(*a*) *Dr. Bastian's cases.* The case recorded by Demeaux (*Brain*, p. 11) shows the loss of muscular sense, of deep and superficial sensibility, and the consequent ignorance of movement and position. The power of voluntary movement remains. One is surprised that Dr. Bastian emphasises the ignorance of movement and passes over without remark the fact of voluntary power and its cerebral concomitant. Yet if we wanted a case that should separate afferent from efferent in muscle, this is one: there is no sensibility, no sense of pressure or of resistance; when directed

to move the patient moves as directed; when her movement is resisted unknown to her, she imagines the intended movement accomplished; she has a feeling of energy given out. Surely this fact is not less important than the ignorance of position; and we imagine this fact tells in favour of a motor concomitant of volition. It may be that this feeling of energy given out is due to afferent processes; but there is nothing in the record to suggest that, and Dr. Bastian nowhere proves it. To one or two other cases almost the same remark applies; they illustrate and almost demonstrate the ignorance of position due to paralysis of afferent nerves, but they demonstrate nothing regarding the central concomitant of conscious movements.

(*b*) *The distinction of Sensory and Motor.* In spite of Dr. Hughlings Jackson's protests long ago, recent discussion has been too much bound to this couple. The distinction, as Prof. Haycraft insists, is a purely provisional one. "If at any time certain cells in this intercommunicating network were looked upon as the special seat of sensation and others as the seat of motion, it is impossible so to view them now. As a result of the passage of an impulse through the nervous system, we may have muscular movement and we may have sensation, but in the nervous paths through which the impulse passes it is not possible to say that one part is more motor than another, or to localise sensation to a given spot. . . . The cells in the cortex are on a loop between the sensory and motor cells of the cord. . . . They are trophic, and perhaps they act like collections of combustible materials placed on a train of gunpowder." This agrees with what Dr. Jackson says—that the physiological substratum of every mental process is a sensori-motor process. And it seems not unlikely that sensory and motor processes will ultimately be expressed in terms of a more fundamental distinction—the anabolic and catabolic changes of nerve-protoplasm. Already the process of inhibition is regarded as probably a building-up or anabolic change.

(*c*) *Relation to Consciousness.* In arguing against the concomitance of feeling and central nervous discharge, it is commonly assumed that afferent processes are always accompanied by consciousness. But to the physiologist consciousness is a shifting affair. Not all processes that reach the cortex are conscious; and some are at one time conscious, at another not. Yet in the general statement of the concomitance of consciousness with afferent processes, this variation does not count. Similarly with motor processes. The problem is not how much at any given moment is in the field of consciousness, but what must we imagine the physiological substratum of a given state of consciousness to be. The question of concomitant consciousness is in fact a case of "cerebral time": at what point in the sensori-motor process does consciousness arise. If, with Dr. Ferrier, we confine consciousness to sensory processes, then, since sensory may excite motor processes, we must imagine consciousness suddenly ceasing on the nervous bridge—the internuncial fibres

—between a sensory and a motor centre. If this be so, the time has come for abolishing altogether the distinction of sensory and motor cortical centres; they are all sensori-motor.

(*d*) *Implication of Will.* "The conflict of mental moods or motives," says Dr. Bastian, "is sometimes slight and sometimes complex (entailing what we now term inhibitory processes), before what is called a resolution or Will to do a certain action is arrived at. As Hobbes quaintly says:—'The whole sum of desires, aversions, hopes and fears, continued till the thing be either done or thought impossible, is what we call Deliberation'. Here then we have intellect in action, with absolutely nothing of motor activity concerned with its manifestation" (*Brain*, p. 135). Further on he describes fibres as issuing from certain regions of the cortex, and by means of these "our Intellect plays upon subjacent motor centres when we desire to perform this or that so-called 'voluntary action'". This "playing" ends in movement.

Dr. Bastian gives this doctrine as a complete displacer of the "out-going current" theory of Dr. Bain. But "intellect in action" means physiologically the action of cortical centres: these excite motor processes; and what initiates a motor process is to all intents and purposes motor—an "out-going current". One may call it sensory or kinæsthetic; that is mostly a matter of terms.

(3) *Cortical Localisation.* There is no agreement either on the localisation of movements in general or of muscular sensations in particular. The interpretation of "motor centres" is far from complete; in fact we must use the words "motor" and "sensory" centres as provisional.

(4) *Psychological Import of Muscular Sense.* The tendency of recent discussion is to put more stress on afferent impressions than on efferent processes. The impressions from skin, fasciæ, ligaments, joints, and from the sensitive nerves in muscle, are thrown together as the physical side of feelings of movement. I have, above, repeated some possible objections to this position; but even if it were demonstrated, a difficulty remains. As a psychological fact, feelings of movement—that is, feelings of energy expended—are radically opposed to passive feelings or sensations. If, therefore, feelings of movement are, like sensations, the mental side of afferent processes, how is it that feelings of movement are opposed to all other feelings? What peculiarity in their nervous substratum corresponds to this antithesis? This is not fully explained yet, and when it is explained the psychological fact remains precisely where it was. The question of the conditions of the "muscular sense" is a purely physiological matter, and if feelings of movement are not concomitants of the "out-going current," then, as Prof. Bain has said (*Senses and Intellect*, 3rd edit., p. 77), "the most vital distinction within the sphere of mind is bereft of all physiological support". That is all.

ON THE DOCTRINE OF NATURAL KINDS.

By M. H. Towry.

During a long study of Taxonomy, it has repeatedly seemed to me that some obscurity and indefiniteness, if not error, hangs around Mill's doctrine of Natural Kinds, and it is rather to draw forth the views of others than to gain expression for my own ideas that I take up the subject in this paper.

I fancy most logicians will agree with me that the keystone of the process of classifying is the doctrine of extension and intension; that the *fundamentum divisionis* is a purely subjective conception; that Discrimination, Abstraction and Generalisation are our working tools in construction; that the whole purport of classifying is the mental methodisation of our knowledge of individuals. Could the mind grasp and retain a full presentation of each Thing, instead of thinking in sequence, the contrivance would be needless.

Further, numerical enumerations are the only classifications that proceed on extension alone; arrangements based on pure intension would be equally unfruitful of results. The only legitimate classifications work on extension, proceeding by intension.

Now, it appears to me that Mill's doctrine of Natural Kinds controverts the whole procedure and *modus operandi* of logical classifying, rests on an arbitrary and untenable proposition, and stands in his theory, like the pillar of Roslin chapel, irreconcilable with the rest of the structure. Moreover, it is alien to the actualities obtaining, so that on both counts it surely should be examined, and either be remodelled or replaced by a truer doctrine.

To make out my indictment it will be needful first briefly to glance at uncontroverted points of theory, in order to demonstrate what an alien stumbling-block the doctrine introduces.

The Predicables were originally not a formal scheme of Classification, but an outline of the co-relations of General Terms. The basis selected by logicians on which to found an exhaustive comprehension of General Terms was that of the relation between the subject and the predicate.

Of the two general terms which form the subject and predicate of any proposition, one, they said, might stand to the other in any one of five relations. Hence it followed that, as these distinctions were entirely relative, some general terms might be, in different sentences, either genus or species, and others either differentia, property or accident. In a short time this meaning of the Predicables was laid aside, and the names were used in the formal analysis of classifying which laid down the requisites of correct diataxis and subdivision. The Predicables were applied not to the general terms, but to the divisions and attributes themselves, and this meaning has so largely displaced the former

that in many treatises of logic the earlier is not noticed. Lastly, four of the Predicables have been a third time appropriated, and are used by biologists in a technical sense.

By means of Likeness (an ultimate element) Things are to be thought of "in those groups respecting which a greater number of general assertions can be made, and those assertions more important than could be made respecting any other groups into which the same things could be distributed" (Mill).

After all this arranging of Things by means of intensive attributes mentally abstracted from the things (for subject and attribute are in reality one, as Prof. Bain and Mill emphatically show)—after all this, we are told that there are in nature Divisions of Kind, bounded by impassable barriers. At first sight this seems an unlooked-for harmony of the actual with the theoretical. Here are Classes ready formed for us. But let us listen to their definition and criteria, and perplexities thicken.

Mill says that a Kind is one of those classes which are distinguished from all others, not by one or a few definite properties, but by an unknown multitude of them; the combination of properties on which the class is grounded being a mere index to an indefinite number of other distinctive attributes, and instances Plant, Animal, Sulphur, Horse, &c., as Kinds. Sometimes the properties on which we ground a class exhaust all that it has in common, or contain it all by some mode of implication. In other instances a selection is made of a few properties from a number inexhaustible by us. Where a certain apparent difference between things (though perhaps in itself of little moment) answers to we know not what number of other differences pervading not only their known properties, but properties yet undiscovered, it is not optional but imperative to recognise this difference as the foundation of a specific distinction. He tells us that there are in nature distinctions of Kind, that they are parted off from one another by an unfathomable chasm instead of a mere ordinary ditch, and that our knowledge of the properties of a kind is never complete. See *Logic*, bk. i. c. 7; iii. 22, 25; iv. 6, 7.

Obj. 1. It is plain, from the above doctrine, that we cannot form our Classes that are Kinds on the basis of attributes, as logic has heretofore directed us to do. We cannot tell what many of the attributes are, nor are we to expect to do so. Yet we have made the group. But how? By connecting the things through some few attributes they have in common, and then, desisting from working by intension, grouping them, as it were, in extension, and postulating that they must have unknown common attributes. Is this procedure reconcilable with Mill's own analysis of the classificatory process?

Obj. 2. Two criteria are given for determining whether a made class is a Kind. First, that a Kind shall have an *unknown* multitude of properties, not merely derivable from one another, the combination of properties on which the class is grounded being a

mere index to an *indefinite* number of other distinctive attributes. If a large part of these qualities are unknown, and "infinite, so far as we are concerned," what grounds have we for affirming that the Natural Kind possesses them? How can we build a class on an *a priori* supposition? Further, how can we be justified in framing a class upon such a changeable and subjective point as our own ignorance? Why should that enter as a factor into Divisions of Things? Surely the number of properties belonging to a group and our hopelessness of discovering them are two points that are wholly alien to the question of the group-formation. *That*, Mill has told us, is regulated by the quantity and importance of statements concerning the group which shall be applicable to the members. If many and important identical statements can be made concerning such and such things, group them. Good. But what statements can be made about an unknown multitude of attributes? Hitherto we have classed things on account of their recognised resemblances, not on account of their assumed and as-yet-unfound ones.

It is undeniable, of course, that of things agreeing in only one bond of likeness (*e.g.*, colour, shape, specific gravity, &c.), only one general assertion and its corollaries are possible. And that of a Kind, as Horse, or Animal, or Sulphur, many general assertions are possible. But the one class is no whit less a merely intellectual creation than the other. Yet it is juster, it will be said. More useful to us, doubtless, but not more objectively true. More useful to us is what underlies Mill's remark, that it would be a palpable absurdity to investigate the common properties of all white things. But Nature has in reality neither the class White Things nor the class Horse. We made both. Mill, however, would say that in the latter case there is a distinction *answering* to our class. Well, then, so there is, in the former. There are a quantity of things in the universe, alike in point of being white; there are a quantity of things alike in points *a b c*, &c. = Horses. The properties are not found by the Kind, but the Kinds are formed by the properties.

Obj. 3. The second criterion of Kinds is that they wholly differ from each other, whilst non-natural Kinds differ only in finite and determinate particulars. Roses and Brambles are not natural Kinds, because a rose does not seem to differ from a rubus, or the Umbelliferæ from the Ranunculaceæ in much else than the characters botanically assigned to those genera or those families. All Kinds, Mill says, must have a place amongst classes, but all classes in a natural arrangement cannot be Kinds, for the distinctions of Kind are not numerous enough to make up the whole of a classification. "The great distinctions of Vascular and Cellular, Dicotyledonous or Exogenous, and Monocotyledonous or Endogenous plants are perhaps differences of Kind. The lines of demarcation which divide those classes seem, though even in this I would not pronounce positively, to go through the whole nature of the

plants." But he gives Horse, Animal, Sulphur, Phosphorus, Diamond, Gold, as examples of Kinds. Now are there absolute lines of demarcation, unfathomable chasms, between those classes? They greatly differ from each other, but not wholly. Is it not in reality a question of degree between their likenesses and those which connect Rose and Rubus? Great degree, doubtless, but still only of degree. Is the criterion theoretically tenable?

Obj. 4. But now let us turn to actualities. Are there in Nature classes clearly marked off from each other, classes to be sought for by us? "La méthode naturelle," wrote Cuvier, "est l'idéal auquel l'histoire naturelle doit tendre; car il est evident que si l'on y parvenait, l'on aurait l'expression exacte et complète de la nature entière." Such was the old view of a natural method, that it was nothing less than a reproduction of a certain orderly arrangement obtaining in the universe, waiting to be deciphered by man. When anomalies cropped up they were, if not too many and too weighty, relegated aside and labelled anomalies; but if too overpowering, it was held that the right basis had not been chosen, or, to use a familiar phrase, a wrong key had been tried. But now there is a tendency to see that so-called anomalies are as legitimate facts as other characters. The old idea was a case of seeing double. There are no natural-made groups behind our groups. It is the endless seeking for this shadow in the stream that has so often misled us.

I may quote some pertinent words of Prof. Newton of Cambridge:—

"The one merges insensibly in the other, as do the race, the species, the genus, and so on. There was a time, and that not long since, when each of these groups was looked upon as a concrete entity having an independent existence, and some men there are who still so regard them; but whether that belief is destined to be perpetuated or restored may well be questioned. It would seem, rather, that each of these groups exists as a group but in the abstract."

Prof. Asa Gray is equally emphatic:—

"The groups which we recognise and distinguish as Genera, Tribes, Orders, &c., are not always, and perhaps not generally, completely circumscribed in nature, as we are obliged to assume them to be in our classification. This might be expected from the nature of the case. For the natural groups, of whatever grade, are not realities, but ideas. Their consideration involves questions, not of things between which absolute distinctions might be drawn, but of degrees of resemblance, which may be expected to present infinite gradations."

Much more might be cited against the theory of "classes in Nature parted by impassable barriers," but I content myself with pointing out how entirely alien to this theory are the experiences of the constructors of natural methods. All who have worked in that field know that the individual is often indeterminable; that the species cannot be fixed; that the qualities of species do not remain constant; that a regular progression cannot be obtained;

that there is not progressive complexity in time or space; that the groups, when formed, are most unequal in size; that they are unequally related; that extinct species (estimated by Sir J. Lubbock at two millions) present a stumbling-block; that so do parasites and abnormal forms; that invariable conjunctions are very few in number; and that even the great fundamental divisions are not irrevocably invariable.

Whewell held that Natural Kinds are determined by a type, around which all individuals which exactly and partially approximate are grouped; that the central nucleus is, as it were, fixed, while the edges fluctuate. But Mill holds that to determine by type would be as sure a way of missing the Kind as arbitrary selection of characters; and that the problem is to find a few definite characters which point to the multitude of indefinite ones. Kinds are classes between which there is an impassable barrier, and we have to seek on which side an object takes its place.

Whewell's type-theory seems to me nearer the truth than Mill's impassable barriers, because it recognises infinite gradations and interminglings; but surely both err in holding that Natural Kinds are to be sought for, not made, by us. Let me not be misunderstood as saying that they depend on the arbitrary choice of the naturalist. He has not an arbitrary choice. His kind or group must be that collocation which admits of the most numerous and most important statements concerning the members. But he does not, I submit, look for "a few definite characters which point to the multitude of indefinite ones". He will, indeed, choose as his diagnosis a few definite characters which point to (are the invariable concomitants of) a number of others, but these not indefinite. And need such a commonplace be added, as that the diagnosis of a class is not necessarily its diataxis?

"The conjunctions of qualities," writes Mill, "constitute the varieties of Kinds." The conjunctions are not fixed by us. But (as in many cases easily adducible) Individuality often is, and so, I believe, is the Kind. Nature does not present us with Kinds, but with Singulars. When we advance beyond Singulars to many individuals or substances forming a "natural Kind," we have made an arbitrary and conventional combination. We formulated the Kind, we selected the archetype, we raised the barriers. Briefly summarised, Nature has only individuals and laws. We recognise intensive connecting bonds of likeness running through things; that is what we find, not demarcated classes. All the class-making, from beginning to end, is our own work, is invention and not discovery. "The General never exists, only the Particular." I am unable to see my way satisfactorily to any other conclusion, yet some doubt lingers with me whether this is the true solution, and, offering it with diffidence, I shall be glad if abler pens than mine will take up the subject. Prof. Jevons talked of Mill's unsatisfactory language, but I am not aware that he ever formulated his own views.

VI.—CRITICAL NOTICES.

Psychology. By JOHN DEWEY, Ph.D., Assistant Professor of Philosophy in Michigan University. New York: Harper & Brothers. Pp. 427.

This book is one of the welcome signs from America of a strong forward movement in psychology now in progress there. The large number of psychological and psychophysical contributions to MIND that have come from over the Atlantic in recent years; the announcement that an *American Journal of Psychology* is henceforth to be added to the list of scientific periodicals in which the abounding energy of the young Johns Hopkins University of Baltimore seeks a vent; the appearance of a work of the size and comprehensiveness of Prof. G. T. Ladd's *Physiological Psychology*, mentioned elsewhere in the present No. and claiming the detailed appreciation that will follow,—are other evidences, to which more might be added, of the same fact. It is significant, too, that the very object of Prof. Dewey's book is to help in getting "scientific psychology" set before the students of American colleges, instead of that "compound of logic, ethics and metaphysics, mingled with extracts from the history of philosophy"—as he calls it—which it has been usual in the past to serve up for them, in connexion with some tags of psychological theory from Reid and Hamilton. Some years ago in MIND (iv. 89-105) a very effective description was given of the kind of elementary philosophical instruction so widely diffused through the United States by the host of colleges, mostly denominational. If the present manual of psychology finds its way into general use among American students, it will not leave things as they were.

A manual of psychology, it is still expressly written as an introduction to the study of philosophy in general. Not only is Prof. Dewey of opinion that it is impossible to exclude from the science a reference to the philosophical principles it involves, but he has, as readers of this Review have been made well aware, very decided views on the quite special relation that subsists between psychology and philosophy. He finds it possible to reconcile an idealism of the thoroughgoing modern type, first developed in Germany, with an adoption of the spirit and aims of the English psychological school from Locke onwards. It has been interesting to hear such ungrudging allowance of philosophical import to the work of the English inquirers from one who speaks the language of a class of thinkers with whom it has been a common fashion to regard it with a certain disdain. Somewhat more certainly, however, than Mr. Sh. Hodgson, from his independent standing-ground, could (in MIND No. 44) impeach

the validity of the attempt to bring about an alliance between German transcendentalism and empirical psychology, may it be doubted whether those who make a first beginning of study under Prof. Dewey's guidance will be able to grasp the peculiar philosophical speech which he is apt to employ in the midst of his psychological exposition. To be told, for example, at p. 6 that "Psychology is the science of the reproduction of some universal content or existence, whether of knowledge or action, in the form of individual, unsharable consciousness," may prove a hard hearing, even when the student is comforted, at p. 157, with the assurance that he will "see more clearly what is meant" thereby after taking in such a statement as the following:—"The knowledge of the finite individual is the process by which the individual reproduces the universal mind, and hence makes real for himself the universe, which is eternally real for the complete, absolutely universal intelligence, since involved in its self-objectifying activity of knowledge". The author also has a way at times of resorting to a kind of kaleidoscopic play with antitheses, which tend to pass over into one another in a manner more dazzling than edifying. There is a notable instance at p. 153, where Apperception and Retention are given as the "two sides of the process of knowledge"—the one accounting for the world as it "comes to exist for us," the other for the self as it "comes to exist as real". The antithetic statements that follow in rapid series through half a page get mixed up in a way that leaves one with no very clear notion of what it is that Prof. Dewey thinks is done for the world by self or for self by the world, how in his view it all comes about, and what that world and self are that he so sets in face of one another. The philosophy involved does not seem to do much for the beginner in this case or in others like it.

It would, however, be giving a very false impression of the character of this text-book to dwell longer on the features yet mentioned. As a purely psychological treatise—implying philosophical principles and portending philosophical issues, but not necessarily to be used for enforcing particular philosophical conclusions—it has great and obvious merits. While Knowledge has the inevitable precedence and prominence (pp. 27-245), a distinct stand has evidently been made for something like a fairly balanced consideration of the two other phases of mind. Feeling, especially, within the hundred pages given to the topic, has received an adequate handling. Feeling and Will have, besides, their part in two chapters of general introduction, as again, to some extent, in the account of Sensation (pp. 27-80) with which "Knowledge" begins. Nothing, indeed, could be better than the whole general view that is given of the relation of the three phases to one another, except when the disposition to merge and dissolve, in dialectic strain, begins to assert itself for the behoof of Will as "the complete activity," "self," "man," or what not, wherein

the opposition of Knowledge and Feeling becomes reconciled. The misfortune of such reconciliation is that the "Will" so construed does nothing to remove the need of still treating Will as a distinguishable mental phase among the others: and the double sense is confusing.

The account taken of Sensation gives perhaps the simplest measure of the book's quality. The main results of recent inquiry about the Senses are well and clearly expounded, and they are set out in a connexion which makes them thoroughly serviceable for one psychological purpose at least. Prof. Dewey has a very distinct notion of the difference between the actual facts or events of mental life and the scientific abstractions by means of which it is sought to comprehend them. Accordingly he distinguishes with excellent effect, under the head of Knowledge, the three topics of "Elements," "Processes" and "Stages". The "Stages"—Perception, Memory, Imagination, Thinking, Intuition—are taken last, as representing, so far as is scientifically possible, what actually goes on in the way of cognition; the order here again being determined by the view that there is a certain abstractness in all the others till in "Intuition" the fulness of knowledge—"knowledge of an individual"—is reached. Between "Processes" and "Elements," the psychological problem of Knowledge is aptly conceived as that of the elaboration of sensations "on the one hand into the objects known, and on the other into the subject knowing" (p. 81), or (p. 84) their transformation into a "world of objects, relations and ideals" and into "the self which knows and idealises". Sensations are, thus, clearly of account for Knowledge as elements, to be worked up by the processes which Prof. Dewey finds to be—respectively for world and self—Apperception (with Association, Dissociation, Attention, as its "kinds") and Retention. But in the earlier introductory section (p. 25) it had been laid down that also the general problem of Psychology was none other than to understand how a raw "material" became worked up by certain "processes" into "results"—described as "the concrete forms of consciousness, the actual ideas, emotions and volitions". Now the raw material is in all cases alike of a sensuous character; at least, it is with none other than sensuous states that the exposition of Feeling and Will, as well as of Knowledge, is made to begin. But, whereas the general scheme of treatment, from elements through processes to results, is, as we have seen, effectively carried through in the case of Knowledge, there is no attempt to maintain it for the other phases of Mind; the whole exposition in their case resolving itself into a description (for Feeling, as already said, a very good one) of what, in Prof. Dewey's language, may be called either "stages" or "results". There is, of course, a good reason for this, though it does not appear to be anywhere explicitly stated. It is that "processes" certainly, and "elements" in the main, have once for all been

sufficiently disposed of under the first head of Knowledge. This, however, amounts to saying that the account of elements and processes is of general psychological import, and is best presented in one division apart of General Psychology, as in the scheme of treatment which Prof. Clark Murray in his *Handbook* (see MIND x. 611, xi. 25) has the credit of first giving currency to in English. Prof. Dewey could, with mere trifling changes of detail, have so set apart his chapter on Sensation, with that on the general principles of mental synthesis which he calls "Processes of Knowledge"; and the gain in expository clearness would, I think, have been undeniable.

There are many points of doctrine set forth in the book which, if space permitted, there would be pleasure as well as profit in examining at close quarters. Whether one agrees or not with the author, it is impossible not to recognise his freshness and independence of view and telling vigour of statement. In particular, his analysis of the "Processes of Knowledge," involving his account of Association, Attention and other topics now so much to the front, may be commended to the notice of psychological workers. One aspect of Knowledge, as it happens, is treated by him in the present No. of MIND at greater length than was possible in the text-book, and a ready opportunity is thus afforded of gauging his manner of thinking on the subject. While in close touch with all the later German and English work in psychology, he is here no simple repeater of other men's doctrine. With even more independence of gait, there is manifest the like intimacy with the best recent inquiry in the very interesting chapters on the upward "Stages" of knowledge. Nor at another point, it may also be remarked, does his exposition come all too short of what in present circumstances may fairly be expected—I mean the reference to physiological conditions. At first, indeed, it seems as if he were ready to go very far in appeal to these. He does not hesitate to lay it down (p. 8) that the Introspective Method fails even to classify the facts of consciousness, much more to explain them: explanation must be sought first of all from the Experimental Method (in physiological psychology), and next, more completely, from the Comparative Method in its various applications. Accordingly, he refers freely enough to neurological facts at the stage of sensation, and even includes some short account of psychophysical procedure. It is very well; but, if students are to profit by such reference, it would seem necessary, in a text-book, to give, once for all, however shortly, a clear and distinct view of the relation of nervous to mental process and a summary of the really important and relevant physiological data. Prof. Bain's example in this matter was worthy of closer imitation than it has received in any of the later manuals for students. It is easy of course, and in a way creditable, to protest against an infusion of physiological smatterings; it is also conceivable that a complete psychological theory, including even

a doctrine of sensation, might be worked out without physiological references. But, in point of fact, nobody thinks of working out any such theory; and, as everybody does import just as much physiological statement as is found necessary or possible or, it may be, convenient, the plain course is to do it with sufficient warning and explanation from the beginning. Prof. Dewey does not do enough in this way for the help of students. Learners, at least if left to themselves with his book, would, I imagine, find it hard enough to connect with his introductory view of Mind in general the doctrine of Sense to which they find themselves straightway conveyed; and I say this without ignoring the section soon inserted on "Relation of the Physical Factor to the Psychical". (In this, by the way, should not "Psychological Objection," at p. 41, be called Metaphysical rather?)

On the general question of psychological explanation, I close with the remark, that if it is to come only, as Prof. Dewey urges, by resort to the Physiological—or more properly (in the wider sense of the word) Psychophysical—and Comparative Methods, there would need to be a good deal more both of psychophysical and of comparative statement forthcoming than he has anywhere provided in his book. Nobody could put more impressively than he does the helplessness of both methods apart from the data yielded by Introspection; and he has himself given throughout the work the best proof that the Introspective Method is by no means so helpless to explain as, at the one place before noted, he too incautiously avers. It should be added that every chapter is followed by a most useful conspectus of the related psychological literature.

EDITOR.

Hume. By WILLIAM KNIGHT, LL.D., Professor of Moral Philosophy in the University of St. Andrews. ("Philosophical Classics for English Readers.") Edinburgh and London: William Blackwood & Sons, 1886. Pp. x., 239.

This little volume is, as we learn from the preface, the precursor to a more extensive work on Hume by the same author, and it would have appeared earlier but for the difficulty of reducing it to such a form that it might neither anticipate the larger book nor lose interest through undue reservation of material. It consists of an interesting narrative of Hume's life, and of a critical account of his philosophy, metaphysical and ethical, which is prefaced in each case by a historical review of his predecessors.

Some inaccuracies, mostly due to inadvertence, are noticeable in the biographical sketch. Of these, the most serious occurs p. 51, where we are told that "when we view Hume's work in the light of the subsequent evolution of European thought, we see that it is upon the *Treatise*, and not upon the *Inquiry*, that

his philosophical fame reposes ". This is erroneous. The *Inquiry* has been far more widely known, and it consequently has had much more influence on the evolution of thought than the *Treatise*.

We may conveniently divide the strictly philosophical part of Prof. Knight's work under three heads—(1) the review of Hume's predecessors, (2) the exposition of Hume, (3) the criticism of Hume.

The historical retrospect seems to me for the most part superfluous, and not always accurate. It is inexact to represent matter and mind in their relative independence as the fundamental existences recognised by Descartes, together exhausting reality. The primary fact for Descartes was in the *ordo ad nos* the Ego, in the *ordo ad universum* God. The existence of matter depended from instant to instant on the divine causality, and was known to us merely as a corollary from the divine veracity. It is inexact also to say that Spinoza identified material and mental phenomena by "bringing in a *tertium quid* distinct from both, to which he affixes another name". It is both inexact and contradictory to call the relation of Hobbes and Gassendi one of mutual indebtedness, and at the same time to add that "Gassendi's works were published earlier, and his theories wrought out in independence and isolation".

I fail to see that this historical retrospect deserves insertion through any conspicuous merit of its own, and I am unable to discover what value it has for the general plan of the book. It would have been better if the account of Hobbes, Spinoza and Leibniz had been omitted, so as to make room for a fuller exposition of Locke. Prof Knight declares that "in explaining Locke we virtually explain Hume," and yet makes no reference to the cardinal doctrine of Locke's epistemology as contained in bk. iv. of the *Essay*. "In some of our ideas there are certain relations, habitudes and connexions, so visibly included in the nature of the ideas themselves, that we cannot conceive them separable from them by any power whatsoever. And in these only are we capable of certain and universal knowledge." Here indeed we have a "virtual explanation" of Hume. But there is no hint of this in Prof. Knight's book. The impression produced by it is that there is nothing in Locke from beginning to end but "empirical psychology".

Closely allied with this imperfect appreciation of Hume's relation to Locke is the imperfect appreciation which Prof. Knight displays of Hume's general attitude to philosophical questions, as distinguished from his treatment of special problems. No explicit account is given of Hume's doctrine of belief as distinguished from knowledge. Nothing is said of "that general maxim in the science of human nature," that wherever there is a close relation betwixt two ideas, "the mind is very apt to mistake them, and in all its discourses and reasonings to use the one for the other". No reference is made to the discussion of Space and Time (in pt. ii.

of the *Treatise*), which is invaluable as bringing into clear light the psychological atomism of Hume and his general method of procedure. The account of the distinction between impression and idea seems unsatisfactory. Prof. Knight's statement appears to imply that Hume, guided by a clumsy metaphor, regarded an impression as something stamped upon the mind by an unknown *x*. To me it seems clear that the antithesis, as Hume intended it, existed only within and for consciousness. Whenever he touches on the subject, he is evidently endeavouring to express a meaning for which he could not find words. He seems to be aware how unsatisfactory it is to name the distinction as one of liveliness merely. It appears to me that the distinction he was feeling after may be expressed as follows:—A mental content "gently introduced" into consciousness by a pre-existing mental content is an idea; a mental content which "makes its way" into our thought without such introduction, and which may therefore be said to "enter with force and violence," is an impression. I think that, if Hume were studied with the same tender care as Kant, this would be the general meaning elicited from his statements.

Where Prof. Knight confines himself purely to the exposition of Hume's treatment of special problems, he is in the main clear and correct. His defect is want of sympathy—he does not enable the reader to enter into Hume's position, so as to realise the historical necessity of it. In short, he fails to make Hume credible. The critical matter is, in point of quantity, in excess of the expository, but in point of quality inferior to it. Hume's doctrine of causality is said to be "a development (and a necessary development) of the doctrine which limits our knowledge to the realm of sense-experience". It would have been nearer the truth if Prof. Knight had said that it was a development of the very opposite doctrine—*viz.*, the fundamental doctrine of Locke, that universal and necessary knowledge is only to be found in discoverable connexions of ideas. According to Prof. Knight, "the curious thing is that he (Hume) never seems to have seen that this link of connexion, if obtained at all, must be obtained *a priori*". Now, on the contrary, this was just the point that Hume was most keenly aware of. His whole difficulty arose from the alleged *a priori* necessity of a relation not implied in the nature of the ideas related. It is true that Hume was far from seeing that the causal judgment was *a priori* in the Kantian sense—*viz.*, as being implied in every cognition of objective change. But this is not the sense in which Prof. Knight uses the phrase *a priori*. He allows that the "senses take note of phenomenal succession". "Some impressions reach us simultaneously, *i.e.*, we combine them in Time." Thus, in order to make the judgment of causality possible, "the intellect strikes through the phenomenal chain . . . and discerns the inner *vinculum*". "The judgment of causality flashes forth from the

mind *a priori*." Closely connected with this divergence from Kant as regards the evidence of the causal judgment is another, which concerns its nature. This, for Prof. Knight, does not consist in the assertion of an irreversible rule of sequence, but in the necessity that "every effect must have a cause," and that "power is lodged within the cause adequate to produce the effect". On the first head, Hume is entirely in agreement with his critic. He acknowledges freely that "every effect must have a cause," inasmuch as this is a relation included in the nature of the ideas related. Hume's own illustration is "that it no more follows from this maxim that all events have causes, than it follows because every husband has a wife, that therefore every man must be married". How would Prof. Knight prove that every event is, in the sense intended, an effect? How would he show that "within every atom, as its interior essence, this force or causal power resides"? His answer would seem to be that "this link of power," this "inner tie," is disclosed to the reason; we discover it by an "intuition of the reason". Now it was just this direct intuition for which Hume searched so diligently, and searched in vain. His conclusion was that, "if we examine this maxim, we shall find in it no mark of intuitive certainty; but, on the contrary, shall find that 'tis of a nature quite foreign to that species of conviction". If Prof. Knight has been more successful in this quest, he ought to have explained the nature of his intuition, and of its claims to validity. He ought to have shown that he has not mistaken an internal impression, psychologically generated, and afterwards projected by subreption, for an objective relation directly apprehended. Instead of this, he has contented himself with reiterating that the judgment is what he calls *a priori*, and seems not in the least aware that he is thereby handing back to Hume his own problem in place of a solution. I am far from saying that Hume has said the last word on this subject; but I utterly fail to see that Prof. Knight's criticism touches his position, or that it is even relevant to the issue raised.

On the question of personal identity, Prof. Knight attacks Hume exactly where Kantian criticism has reinforced his conclusion. The position maintained in this book is that the existence of a series of impressions and ideas implies the existence of a permanent identical substratum. The arguments used do not seem very conclusive. Thus (p. 178) Prof. Knight triumphantly asks, "if all that I am is this series of successive and detached impressions which I subsequently recall . . . how are they my impressions and my ideas?" The obvious answer is that, if by 'myself' I mean a series of ideas, in calling an idea 'mine' I must mean that it is part of this series. It is moreover difficult to see how a substrate can perform the work which Prof. Knight assigns it. If a succession of states of mind cannot of itself yield personal identity, it is far from clear how the case is improved by substituting a succession of changes in a permanent underlying entity.

Perhaps the apparently unsatisfactory nature of Prof. Knight's criticism is largely due to the fact that we are not sufficiently acquainted with his own standpoint. The passage which seems most significant as regards his peculiar views is also the most perplexing in the book. In discussing Nominalism (p. 181) he seems to affirm (1) that if all our knowledge were dissolved into a string of particulars, we might still attain to science; (2) that substance is a generic (!) element, distinct from and underlying particular phenomena; and (3) that eternal ideas lie at the root of individual things, and make their "entrance and exit" among the phenomena of sense, unaffected by them. Statement (1) must be due to inadvertence; (2) and (3) seem to express a form of Platonism which Plato himself in all probability outgrew, and which in the *Parmenides* he crushingly refuted.

Doubtless if Prof. Knight had been permitted by the conditions of his undertaking to give a more detailed, and consequently more advantageous, account of his own views, his criticism of Hume would have appeared more intelligible and more forcible. As it is, the present book does but raise expectant curiosity in regard to the larger work that is promised us.

G. F. Stout.

Scottish Metaphysics Reconstructed. By the Writer of "Free Notes on Herbert Spencer's *First Principles*". Edinburgh and London: W. Blackwood & Sons, 1887. Pp. xiv., 244.

On first taking up this work as a reviewer, my impression was that a very few lines of wholesale condemnation would be the most effectual mode of dealing with it; but as I read on I came to the conclusion that the author had something important to say, if he had only known how to express it. It is not, however, Scottish Metaphysics, but a system much more akin to that of Plato and some of the modern Germans; and I cannot but regard both the title of the book and the form in which the author has chosen to give his philosophical views to the world as singularly ill-selected.

The form adopted is a kind of running commentary on the *Lectures* of Sir William Hamilton, other authors being only occasionally introduced. It is the general opinion of Hamilton's disciples that these *Lectures* contain neither the latest nor the most accurate exposition of his philosophy; but the author does not, I think, refer even once to the *Discussions*, and makes very few references to the Notes to *Reid* (in none of which does he state on what page the quotation, or supposed quotation, is to be found). From the *Lectures*, however, the quotations are sufficiently abundant, but they are utterly wanting in any approach to accuracy. He tells us at the outset, indeed, that they are "summary-quotations," which apparently means that they are summaries of Hamilton's doctrine compiled by the author, and

consisting to a certain extent of Hamilton's own words; but placing these summaries within marks of quotation is calculated to mislead the reader, and make him suppose that he is dealing with Hamilton's words, when in point of fact the words are often widely distinct from those of Hamilton. Some of these summary-quotations I have failed to identify, though the author has indicated between what pages they are to be found. In other cases I have only identified a summary-quotation to find it a summary-misquotation. For instance, in describing Hamilton's distinction between knowledge and consciousness, the author informs us (within marks of quotation) that "in an act of knowledge my attention may be fixed either on the object-known or on the subject-knowing, and this act of knowledge in relation to the knowing-subject is called knowledge" (p. 52). Nor is this a mere slip of the pen, for the author has told us immediately before (also within marks of quotation) that according to Hamilton "pleasure and pain, desire and volition, are phenomena absolutely new and superadded to consciousness, and were never involved in, and could therefore never be evolved out of it" (p. 51; see also p. 41). Indeed, throughout the work the Hamiltonian distinction between knowledge and consciousness is not merely misunderstood, but inverted, and the inversion is usually described as a quotation. When the author has occasion to refer to the same passage for the second time, he refers not to the original work, but to his own previous note. Thus at p. 83 we find: "In note 17 Hamilton speaks of 'the whole divisible mental phenomena,'" the reference being not to any writing of Hamilton's, but to the author's own note numbered 17. And his talent for misquotation is such that sometimes he actually misquotes his own note. Thus, after italicising a word which Hamilton uses in his summary-quotation at p. 24, he alters this very word in quoting his own note at p. 125. As a specimen of the absurdities attributed to Hamilton in these summary-quotations, I may refer to p. 115, where he is represented as saying: "A complex or collective notion is made up of the repetition of the notion of an army, &c.". But the author is, in fact, as little accurate in his own language as in that which he ascribes to others. I find him speaking at p. 63 of the subject, predicate and *conclusion* as forming "a syllogistic whole" which by intuition we view in space. This is enough to make the hair of a logician stand on end. Other authors fare no better than Hamilton. Not only the page, but even the name of the book cited is not given, and "W. Thomson," I believe, at one time stands for the Archbishop of York and at another for Sir William Thomson, while "Stewart" is applied indifferently to Dugald and Balfour. In short, the best advice that I can give to the reader is to discard the quotations (or summary-quotations) altogether, and deal with the work as if it was an original treatise, not a criticism, and as if it emanated from an independent School of Philosophy

having no relation (save perhaps one of opposition) to the Scottish.

Treated as an independent philosophical treatise, its main feature is the attempt to attain by intuition to the knowledge of certain universals, some of which at least have been vainly sought for on the basis of discursive reason. These universals are Space, Time, Force, Intelligence, Goodness, Causation and, over all of these, Existence. Higher than all, in the opinion of the author, stands the personal God; but His existence and attributes are, if not wholly dependent on revelation, at least known by intuition only to a select few—the majority of mankind having been without this intuitive knowledge since the fall of Adam. It would have been better if the author had omitted this last portion of his theory and confined himself to what could or could not be established on philosophical grounds; though, if the narrative of Adam can be relied on as an expression of literal truth, it would seem that the eating of the forbidden fruit had enlarged rather than contracted the sphere of human cognition. The author draws a wider distinction between the various human faculties (if "faculties" is the proper expression in his system) than had been done by the Scottish School, and attributes to each faculty the perception or intuition of its appropriate universal. Thus Space falls under the faculty of Cognition, Time under that of Emotion, and Force under that of Conation. But then he contends for a kind of twofold Mind or Soul (I really do not know what expression to use, for the author would confine most of the ordinary terms to one branch of it), the second of which intuites a second triad in Intelligence, Goodness and Causation, while above both triads stands Existence as already indicated. There is even a third branch of the Soul which, though killed at the Fall, is capable of being recalled to life, and this part (so far as I understand the author) intuites the Deity in the form, I presume, of a third Triad. All these objects of intuition are Universals, and all are hyperphysical or supersensuous. We may have a sensuous perception of the modes of some of them (and he contends, in opposition to the majority of philosophers since Hume, that we have a sensuous perception of the modes of force), but not of the Universals themselves. The latter are not perceived, but intuited; but their universal and necessary laws are not to be found in the mind, but in the intuited Universals themselves. Necessity and Universality are thus objective, not subjective, but the objects in which they reside are not sensible but supersensible. Besides the objective physical sphere there is an objective hyperphysical sphere, with which the mind, or soul, or spirit, or self, or Ego (or whatever the author desires to call it, for he seems to draw distinctions between these terms which I do not comprehend) is in direct contact. Why our perceptions or intuitions of the one sphere should give rise to universal and necessary laws, while our perceptions or

intuitions of the other lead to nothing but empirical generalisations, does not clearly appear; but I presume the author would say that this difference arose from the difference of the spheres themselves. The laws of the one are perceived to be universal and necessary because they *are* universal and necessary; the laws of the other are perceived to be contingent because they *are* contingent. Mind, both in perception and in intuition, is a passive recipient of impressions, but in both instances they are true impressions.

Such a system, if properly developed and set out, together with its evidence, is certainly worth considering; but I have sufficient faith in the method of the old Scottish Metaphysics to believe that evidence is, after all, the main point. Reid and his followers denied that all evidence should be addressed to the senses, but they insisted that nothing should be laid down in philosophy that could not be supported by evidence. On what evidence, then, does the author rely? His answer is by no means as clear as could be wished. He has hardly grappled with the question of the relation between the Space and Time which we sensuously perceive and the Space and Time which we hyperphysically intuite—for to call the former modes of the latter seems to me to be darkening counsel by words without knowledge. But it is still worse with Force. All men probably believe that the Spaces and Times with which they have to deal are parts of one vast Space and one vast Time. But they do not believe that all the forces with which they have to deal are parts of one vast Force. And so far as I have studied physical science, I believe that in this respect it confirms the popular notion. Every particle of matter acts on every other particle, and even if there is but one force acting between each pair of particles, supposing the number of ultimate particles to be n, the number of ultimate forces will be $n(n-1)$. These forces may to a large extent act according to the same laws; but if the same course of teaching was adopted in every school in the kingdom, should we infer the existence of a Universal Schoolmaster, of whom all the individual Schoolmasters and Schoolmistresses were so many modes? I may add that the author cites in support of his cosmical universals, Space, Time and Force, not any well-known physicist, but Mr. Herbert Spencer's "co-existent resisting positions". Mr. Spencer probably intended this as a description of ponderable matter for which it may answer tolerably; but the author, who includes the luminiferous ether in his external world, is plainly bound to discard it. The ether undoubtedly transmits force, but the balance of evidence appears to indicate that it is wholly unresisting.

Space will not permit of a more extended examination of this theory. It is well worth stating and defending; but it seems to me to be even at the outset encumbered with difficulties, and most readers of the book will, I think, find others cropping up as they go on. I may perhaps particularise the author's reference

of Time to the Emotive Faculty, with the apparent consequence of referring Arithmetic and Algebra to the Feelings or Emotions.

W. H. S. Monck.

Die philosophische Weltanschauung der Reformationszeit in ihren Beziehungen zur Gegenwart. Von Moriz Carrière. Zweite vermehrte Auflage. 2 Theile. Leipzig: F. A. Brockhaus, 1887. Pp. xi., 419; vii., 319.

Even more now than when it was first published, forty years since, Prof. Carrière's classical work on the philosophical ideas of the Renaissance or "Reformation-time" appeals to the need that is felt for the kind of renewal which he has himself described, by a phrase adapted from Machiavelli, as a "bringing back of philosophy towards its origin". Along with the increasing specialisation of the present century there has been a rising desire, as Prof. Carrière shows, to attain again that largeness of outlook which has characterised the beginning of each intellectual epoch and which specialisation by itself tends to destroy. The philosophical ideas that within the properly modern period have been developed in different and sometimes conflicting directions, are all present, he contends, "in germinal totality," in the philosophy of the transitional period from the middle of the 15th to the middle of the 17th century. In Giordano Bruno, the supreme philosophical expression of that period, we may rediscover a view of the world as a whole which was lost in the dispersion of thought during the 17th and 18th centuries, but which could not have been fully understood till the various elements combined in its original unity had been worked out in their separateness. The systems of Spinoza, of Leibniz and of Hegel are all developments of that which is contained implicitly in Bruno. With the theory of things that Bruno attained by poetic vision, but left to others to develop dialectically, the mystical doctrine of Jacob Böhme—who represents the freer spirit of the German Reformation as Bruno sums up the Italian Renaissance on its philosophical side—is in essential agreement.

It is not necessary to go as far as Prof. Carrière in seeking at the opening of the history of modern philosophy an anticipation of a final doctrine, in order to recognise the justification of his point of view. Whether Bruno's writings in particular have had any positive influence or not, they have undoubtedly the character that is claimed for them of anticipating many theories of later science and philosophy. And Bruno is most important in relation to the present where he is most the representative of his age. Penetrated, as Prof. Carrière says, with the spirit of the classical writers and thinkers, he sought to form out of the fragments of ancient thought and the beginnings of modern science a system opposed at all points to Scholasticism or

philosophy within the limits of faith. He represents at once the "return to nature," that is, to the direct vision of things apart from all external authority, the rejection of the "consuetudo credendi"—"impedimentum maximum cognitionis," as he calls it—and the "return to antiquity," that is, to the study of what had already been achieved by free speculation and free artistic impulse. Now this intellectual and spiritual detachment from the Middle Age, in spite of the progress that has since been made in the practical sphere and in every field of science, has in some respects never been so complete as it was during the Renaissance. What was at first gained by the insight of the few has had to affirm itself in its application to details of life and thought and to diffuse itself by degrees downwards from the sphere of higher speculation. During this process the "consuetudo credendi" has reaffirmed itself in innumerable reactions, and has often made the systems even of great philosophers other than they would have been had they been determined simply by free speculative activity. If then we are to make a new effort at speculative construction, the philosophers of the Renaissance may be of more importance to us than some later and more celebrated thinkers. It is true that a more exact knowledge of ancient thought, the principal material of the men of the Renaissance, has since become possible; but this does not by any means destroy the interest of Renaissance speculation. Ideas derived from ancient philosophy were not merely reaffirmed, but gained at once in generality and concentration through the necessity of opposing them to the concentrated and generalised positions of an authoritative system of received doctrine. Thus it is that in the period of transition before the real beginning of modern philosophy with Descartes, we see better than at any later period what is the permanent character and tendency of the higher speculation of modern times. A new way of thinking as regards the whole is already clearly defined against the mediæval way of thinking; and the influence of the resisting intellectual medium in which the modern spirit is to move has not yet been felt in its full complexity.

Some readers will find in Prof. Carrière himself, so far as he aims at a new philosophical synthesis, a certain falling-off from the Italian philosopher for whom he expresses most admiration. Whether we call it a falling-off or an advance, it is certain that he is not so nearly at one with Bruno in his answers to the highest questions as he thinks. To this we shall have to return; but first an attempt must be made to give to English readers some idea of the distinctive features of Prof. Carrière's book as a history of the whole period of intellectual transition from the Middle Age. What is especially worthy of note is the wide range of his sympathies. Revivers of ancient philosophy, scientific investigators, magicians and alchemists, political thinkers, mystics and original philosophers are successively passed in

review, and everywhere we feel that the author has more than a mere external interest in his subjects, that he has himself seen things in turn from all the points of view that he is describing. Every chapter is drawn from original sources; and while there is no want of detailed information, a clear general idea is conveyed of the meaning of each movement and the purport of the doctrines of each individual thinker. The minor figures of the Renaissance and the Reformation are not neglected, and indications are given of the nature of the preparation for both movements in the later Middle Age; the German mystics of the 14th century in particular being dealt with at considerable length. The biographies and the general historical background make the book full of human interest.

The general introduction and conclusion being counted separately, the first four chapters deal with movements, the rest, except the sixth—which is a short introduction on "Religion and Philosophy in Italy," placed at the beginning of the second volume—with individual thinkers. The movements dealt with are (1) the revival of Greek philosophy, (2) the scientific movement and the occupation with "magic," (3) the effort after social and political reform and the speculative ideas in which it found expression, (4) German Mysticism and the Reformation. The writers who are considered to be of sufficient philosophical importance to demand treatment in separate chapters are Böhme (i. 310-419), Cardan (ii. 7-33), Telesio (34-45), Bruno (46-189), Vanini (190-214), and Campanella (215-296). The sixth chapter (ii. 1-6) is chiefly a study of Savonarola.

The chapter on Giordano Bruno is the longest in the book, and for the author Bruno is the centre of interest. These reasons might suffice to justify a critic in devoting special attention to that chapter. There is, however, the additional reason that the writer of the present notice will thus be discharging an old engagement. Prof. Carrière's general view of Bruno has been adopted, as was pointed out in the last number of MIND, by the author of the English *Life of Giordano Bruno*, recently published by Messrs. Trübner, for the appearance of which the continuation of a former article on Bruno in MIND (Vol. ix.) was reserved. Such a critical estimate of Bruno's philosophical position as was promised in the postscript to that article must necessarily be stated or implied in any detailed judgment on Prof. Carrière's chapter. The present review, in dealing with this chapter, will accordingly be at the same time a fufilment of the promise then given. In making the chapter on Bruno the main subject of criticism, we shall not lose from sight Prof. Carrière's general purpose, which, as has been explained, is more than merely historical, being to treat the philosophers of the Renaissance and Bruno in particular in their relations to the present time. His treatment of Bruno is, besides, more open to criticism than his treatment of philosophers for whom his admiration is less; for this admiration causes him to

see in Bruno greater agreement with his own philosophico-religious ideas, and with those of the mystics whom he equally admires, than really exists.

As Prof. Carrière would have us return to Giordano Bruno in order to recover a totality of view that the moderns have lost, so he would have us return to Jacob Böhme and to the German mystics of the 14th century, Böhme's predecessors, in order to set reformed Christianity free from the dogmatic fetters imposed by Luther and Calvin. Now, of course, he cannot help recognising the differences between Bruno's poetical philosophy and Böhme's mystical theology ; yet he tries to show that in spite of all differences the Italian philosopher and the German mystic are in agreement " in their highest ideas ". Above all, there is in both alike a final " reconciliation of Theism and Pantheism ". This reconciliation, he contends, is to be found in Christianity rightly understood. Already in the 14th century Eckhart, Suso and Tauler had caught sight of it as by inspiration. Marsilio Ficino and other Platonists of the early Italian Renaissance also had glimpses of it. Towards the clearer vision of this reconciliation the whole of modern philosophy has been tending. Opposite ideals of life, too, are approaching their reconciliation. Protestantism, favourable as it was in the end to exact learning notwithstanding the dogmatic formulas by which its growth was long checked, has brought about a new revival of Hellenism in Germany ; and " this reawakened Hellenism is no other than what the Christian Jacob Böhme has depicted as the life of the new birth ".

Of the manner in which " philosophical Mysticism " overcomes and reconciles the opposition of " Deism " and " ordinary Pantheism " two different accounts are given. Sometimes it is represented as combining in a single conception the ideas of the universe or of the Infinite, and of God as " self-conscious Spirit " ; sometimes as a union of the ideas of the " transcendence " and the " immanence " of God. If, however, theism and pantheism are to be combined in a single conception, it is the last contrast that is all-important. God may be identified with self-conscious spirit to the entire exclusion of nature, which may be regarded as an illusion or a mere negation, and the doctrine may still remain pure pantheism. Theism, in any intelligible sense, means the idea of God, in Spinoza's phrase, as " princeps et legislator," as a personal being ruling the course of things and judging the actions of men. This is what seems to be meant by the doctrine of " transcendence ". On the other hand, what is common to all forms of pantheism is the doctrine of " immanence ". The ultimate explanation that deism and monotheistic theology seek outside and above the universe, pantheistic philosophy seeks within the universe. But for pantheism itself there remains the opposition of nature and mind, an opposition which is expressed with perfect clearness by Euripides (*Troades*, 886) in

the alternative—Ζεὺς, εἴτ' ἀνάγκη φύσεος εἴτε νοῦς βροτῶν, and therefore was not first revealed to consciousness by Christianity, as Prof. Carrière almost seems to hold. According as it takes one or the other side of this alternative, pantheistic philosophy may assume the form either of what Prof. Carrière calls "naturalistic pantheism" or of what may be called spiritualistic or intellectualistic pantheism; or it may seek to unite the two opposites in a single conception. Now this opposition of nature and mind is that on which Prof. Carrière principally dwells. When he speaks of "ordinary pantheism," it is naturalistic pantheism that he means; and in most cases when he speaks of the union of pantheism and theism he means the union of the ideas of nature and mind. As he does not clearly distinguish this opposition from that of immanence and transcendence, but rather seems to regard them as the same, identifying the idea of a transcendent and personal God with the idea of God as intellect or spirit, it is necessary to consider separately how far there is an effort at reconciliation of either pair of opposites on the part of Bruno and of the Christian mystics.

Now there is no doubt that Christian Mysticism really affirms a Deity who is at once immanent and transcendent, or in the universe and above the universe. The mystics identify the transcendent and personal God of theology with an internal divine principle manifested in nature and in the human mind. Thus they may be said to combine, if they do not reconcile, the theistic with the pantheistic position. The pantheistic element of their doctrine, however, tends to gain the mastery; hence accusations of heterodoxy against the mystics. Prof. Carrière himself sometimes seems to reject altogether the idea of an extra-mundane Deity, and in one place he ascribes this rejection to Böhme (i. 373-5); yet in other places (*e.g.*, ii. 305-6) he affirms it as the necessary complement of the pantheistic element of his doctrine. The consistent pantheism of Spinoza rejects the idea of a transcendent God altogether, but at the same time seeks to unite the conceptions of nature and mind by making thought and extension attributes of the one substance. Is Bruno to be classed with Spinoza, or, as Prof. Carrière contends, with the Christian mystics?

According to Prof. Carrière there is evidence of development in Bruno's writings. In the *De Umbris Idearum* he is a Platonic Idealist; afterwards, in the Italian works composed in England, he gives clear expression to naturalistic Pantheism; finally, in the Frankfort books, and especially in the *De Immenso*, the theistic element becomes distinct. If then in the *De Immenso* Bruno not merely leaves aside but positively rejects the doctrine of transcendence, this is conclusive against Prof. Carrière's contention for the theistic character of his doctrine.

That there are passages in the *De Immenso* obviously directed against the New Testament miracles and the doctrine of the

Incarnation, as well as the mysteries special to Catholicism, may not by itself be sufficient to prove that Bruno does not hold the doctrine of transcendence in common with the Christian mystics. Even a passage such as this is perhaps not decisive, though the very idea of miracle in the sense in which its possibility at least must be admitted by a theist, is rejected precisely in the spirit of Spinoza. Referring to comets, of which he gives a naturalistic explanation, Bruno says :—

"Some fly to a virtue above and beyond the natural, saying that a God who is above nature creates those appearances in heaven in order to signify something to us : as if those things are not better and the best signs of the divinity which come to pass in the ordinary course, among which those appearances also are not disorderly ; although their order may be concealed from us : but with prophets of this kind we do not speak, nor shall we be careful to answer them where it is not necessary to speak without sense and reason." (*De Immenso*, iv. 9.)

In the last book of the *De Immenso*, however, there is still more unambiguous evidence of Bruno's position. For a great part of this book is a polemic against the doctrine of transcendence as it was held by Palingenius and other Platonists. There is no "supernal," "intelligible," "immaterial" light, Bruno tells the Platonists, such as they imagine outside the world, no light except that which shines within the mind and outside us in nature—

"Quæ importunissima pulsat
Pectora, quæque intus nobis splendescit et extra".

'Nature' is the name for a principle that is within things ; and the law by which all things accomplish their course (lex qua peragunt proprium cuncta entia cursum) is nothing but a logical abstraction (abstractum quiddam logica ratione). The whole is summed up thus :—

"God is infinite in the infinite, everywhere in all things, not above, not without, but most present, as entity is not outside and above beings, as nature is not outside natural things, as there is no goodness outside that which is good. But essence is distinguished from being only logically, and as reason from that of which it is the reason."

Passages such as these throw light on the distinction, which in various forms is sufficiently frequent in Bruno, between God as absolute intellect and the manifestation of God in nature and in the human mind. When, for example, he distinguishes truth "before things," "in things" and "after things," he is applying in the sense of his own philosophy a traditional logical distinction recognised by him as no more than logical. By the distinction of God as absolute from the knowledge of God is expressed the imperfection of all actual conceptions of the divinity as compared with their ideal completion. Thus in the *Eroici Furori* the mind is represented as striving to identify itself with the absolute unity of the divine intellect, and as constantly baffled in this desire of unattainable knowledge. Nature or the infinite universe as distinguished from the divinity itself is variously called the "image,"

the "shadow," the "simulacrum" or the "attribute" of the primal intellect, which may manifest itself by other attributes, all of which must be infinite and eternal. The possible existence of unknown attributes (on which, for the rest, Bruno does not dwell) again necessitates the distinction of God as absolute from the manifestation or "reflexion" of God in things.

This may perhaps in one sense be called a doctrine of "transcendence," but it is not to be confounded with the theistic "transcendence," which implies a possible supernatural or miraculous. When Bruno speaks of a God who is known by supernatural light (as, for example, in *Della Causa*, ed. Wagner, i. 275) it is as an object of faith, with which philosophy is not concerned; and he sufficiently explains his attitude towards faith elsewhere. Although, however, there is no distinctively theistic element in Bruno, Prof. Carrière is right in insisting that his doctrine is not simply a naturalistic pantheism. Just as much as Spinoza, though in a different way, he seeks to overcome the dualism of nature and mind. And the conjecture that there is a development in his writings from a more naturalistic to a more spiritualistic doctrine is in itself plausible; for, in a passage of *Della Causa*, "Teofilo," the representative of Bruno, declares that he once inclined to the opinion of "Democritus and the Epicureans," who say that that which is not body is nothing, and who consequently will have it that matter alone is the substance of things and is also the divine nature, as was said by Avicebron in the *Fons Vitæ;* but that, having more maturely considered, he had found that it is necessary to recognise two kinds of substance—"matter" and "form" (Wagner, i. 251). Nevertheless there seems to be no evidence in Bruno's existing writings of such a development. Both sides of his doctrine are already clearly present in the *De Umbris Idearum.* The *Eroici Furori*, published in London, is chiefly expressive of its spiritualistic or Platonist side. And in the Frankfort books there are expressions of its naturalistic side identical with those of *Della Causa.*

The truth seems to be that before writing anything philosophical Bruno had arrived at the pantheistic doctrine of which an expression, as of something already familiar to him, is found in the dedication of his Italian comedy *Il Candelaio* and in some elegiacs at the end of the *De Umbris Idearum.* In these condensed expressions the stress is laid on the unity and permanence of substance and the eternity of vicissitude. Vicissitude, according to Bruno's philosophy, is possible only by the coincidence of contraries in the one Principle of things. The one Principle, the identity of unity and infinite number, becomes explicit in the productive energies and varied forms of nature. Nature produces the human mind, and the mind seeks to return, by intellectual concentration, to the unity of its principle. Thus the source of things and the end to which they aspire are one and the same.

A more correct interpretation of the doctrine of which this is

an outline has been arrived at by M. Renouvier in his *Classification systématique des Doctrines philosophiques* recently reviewed in MIND, when he describes Bruno as the most consistent of all pantheists in so far as he most explicitly makes the contrast of good and evil vanish with all other contrasts in the Absolute, than by Prof. Carrière when he sees in it theistic elements. That this consistent pantheism does not lead to a moral indifference such as M. Renouvier thinks ought to be its consequence, is evident, however, from the passages in which Bruno touches upon ethical questions. In the *Spaccio* he pronounces a strong condemnation on all that in modern times has been called "Machiavellianism," with obvious reference to some positions of Machiavelli himself (Wagner, ii. 217). Like Lucretius, he has in view the ethical applications of his philosophy; showing how it "takes away the dark veil of the mad opinion concerning Orcus and the greedy Charon," how it destroys the fables that are related of maleficent gods, "the dogmas of the sycophants"—

> "Absona quæ ingenio, et sensu constantia nullo
> Humanam turbant pacem seclique quietem,
> Extinguunt mentis lucem neque moribu' prosunt".

His attacks on historical Christianity are above all on ethical grounds, and it is especially the practical accompaniments of the creed in his own day that move his indignation. His "*Bestia Trionfante*," in one of its significations, has precisely the meaning that modern criticism finds in Voltaire's "*Infâme*". Among the manifestations of the monster, the chiefs of the Catholic Reaction are not obscurely indicated.

The general nature of Bruno's treatment of theological mysteries in the *Spaccio* and of his "Euhemeristic" theory of mythology are very well brought out by Prof. Carrière, though he does not perhaps quite see that intellectually Bruno was specially hostile to the three monotheistic Semitic religions, for the reason that he found more easily in polytheism an exoteric expression of one side of his philosophy. In his attitude towards theology, to judge from one passage (ii. 99), Prof. Carrière supposes that there was a development—his later books being less contrary to the faith than his earlier—and that this development is established by Bruno's own words before the Inquisition at Venice. Prof. Carrière's interpretation, however, is not borne out by the passage in the documents that seems to be referred to (Berti, *Vita di Giordano Bruno*, p. 353). And, as a matter of fact, the Latin poems, while they contain fewer passages directed against theological doctrines than the *Spaccio* and the *Cabala*, contain more than *Della Causa* and *Dell' Infinito*, to which in their general subject-matter they closely correspond.

There are, no doubt, variations of mood in Bruno's attitude towards Christianity; but not such as indicate any real change of mind. When he speaks favourably of "the theologians" it is on the supposition that they are willing to tolerate philosophy

and even to recognise it as superior to theology. The religion of philosophy is for the few, the religion of faith for the many, who are unable to rise to philosophic virtue or have not sufficient natural goodness to act rightly without external law. By those who are only capable of faith and not of reason, the moral precepts of religion must be accepted as commands, and the theologians, having practice alone in view, may attach to them as sanctions doctrines which the philosophers from the point of view of free speculation may reject. But when false leaders arise who, seeking their own gain under the pretext of promoting religion, teach that the gods care only for the beliefs of men, when they extol ignorance and credulity as superior to knowledge and reason, and persecute those who hold other opinions, they are to be regarded as Hydras and Chimæras worse than those of old time; and to overcome them is the task of the heroes of the present world. "True fathers and shepherds of the people" have never prejudiced the liberty of philosophers.

This attitude of Bruno explains perfectly his partial submission to the Church before the Venetian tribunal. As Prof. Carrière says, he had no intention of recanting his philosophical ideas. "He recanted his ecclesiastical heresies, not his philosophy." And in return for this purely formal submission in matters of theology, he wished to be free to pursue his philosophical career, not merely as a student but as a writer, without molestation. His hope was that the fury of the Catholic reaction had abated, and that the new Pope, who was said to be favourable to learning, might accept the dedication of a book he had just composed. Some have found a difficulty in reconciling with this submission his subsequent refusal to recant certain propositions drawn from his writings. The difference, however, from Bruno's point of view, between a submission to the Church in theology, implying only that he had no intention of directly attacking the popular faith and was not an adherent of any new sect, and the unconditional recantation of propositions of his own philosophy, seems sufficiently obvious.

At the end of his exposition Prof. Carrière makes some interesting and instructive comparisons of Bruno with later philosophers. The analogy with Spinoza has always been the first to suggest itself. This analogy Prof. Carrière draws out in the manner already indicated. In Bruno he finds the original harmony of the doctrines of the unity of the world and the individuality of its parts that were developed in a one-sided manner by Spinoza and Leibniz; and he further contends that to the Spinozistic notion of substance Bruno added the conception of a divine "self-consciousness". This last contention, although not admissible in the precise form in which Prof. Carrière defends it, has yet an element of truth. Bruno, like Spinoza, calls the extended world an "attribute" of God; but with Bruno thought is not simply an attribute parallel with extension, but, as absolute, is

identified with God himself. The idea of personality, or of "self-consciousness" in the special sense, is no more present, however, in Bruno's doctrine than in Spinoza's. The doctrine of absolute thought as the unity from which all things proceed and to which they aspire according to the degree of their perfection, is the spiritualistic side of Bruno's pantheism. On the other side, he also identifies Nature, in one of its meanings, with God. "Natura est Deus in rebus." Nature, again, is sometimes identified with matter, and from matter all forms of things are said to proceed; nature, as an "internal artist," producing the more perfect from the less perfect. By "matter" is not to be understood here the matter of the Epicureans, but matter as coinciding in the absolute with "form," or matter to each element of which is joined an element of spirit, so that the world is animated as a whole and in every part. It is to express this side of his doctrine and not the properly spiritualistic or intellectualistic side that he quotes the well-known lines of Virgil, ending—"Mens agitat molem et magno se corpore miscet". By the substitution of 'toto' for 'magno'—a variation which always occurs in his quotation of this line—the idea of the universal animation of the world, rather than of its direction by intelligence, is still more accentuated. The notion of intelligence as directing things finds its expression in the identification of Fate with Providence; but the perfection of the world which is said to be its final cause is not an ultimate state, but is simply "that in different parts of matter all forms shall have actual existence" (Wagner, i. 237). In the theory of particular things, of the life of animals, for example, this doctrine becomes what is now known as the doctrine of "internal teleology". All things seek their own preservation according to the knowledge they have of that which is conformable or opposed to their nature. The actions of ants and spiders, for example, are not directed from without by "unerring divine intelligences," but from within "by their own prudence and artifice". Haeckel's suggestion that some animals have senses which man has not is made by Bruno. In what relates to the souls of individual things, Prof. Carrière has noticed especially resemblances to Leibniz. As the terms 'mode' and 'attribute' are used incidentally by Bruno in the Spinozistic sense, so the terms '*monas*' and '*Monas monadum*' are used by him in the Leibnizian sense. He also puts forth the Leibnizian doctrine that no two individual things in the universe are absolutely alike. His doctrine of the perfection of all things in relation to the whole and from the point of view of intellect is Spinozistic rather than Leibnizian. The principle of "the coincidence of contraries," derived immediately from Nicholas of Cusa, by which he combines the opposite terms of his pantheism—the indivisible intellectual unity to which the mind aspires and the infinite multiplicity of a universally animated nature, has obvious resemblances to the dialectic of Hegel. As with Heraclitus and Hegel, it is made

the ground of an evolutionary theory. Individual things are represented as all in perpetual mutation, some approaching and some receding from the absolute unity; every soul or central monad occupying in turn all positions in "the wheel of metamorphosis". If those interpreters of Hegel are right who say that he teaches no real evolution in time but only a "dialectical" evolution, then Bruno's philosophical doctrine is more nearly than Hegel's an anticipation of the tendency of modern science.

In his attitude towards science, as Prof. Carrière says, Giordano Bruno is a guiding star for philosophers. His boldness in taking up the Copernican astronomy into his system, has been entirely justified by the succeeding centuries. That theory, in his day, was in the position of the theory of organic evolution before Darwin; and it ought to be remembered that he not only accepted the theory of Copernicus but made an extension of it which has also become a permanent scientific possession. Isolated suggestions of ideas that have since become important or celebrated have frequently been pointed out. The saying, for example, that the moderns are in reality older than the ancients, occurs in Bruno. The preference he expressed for the earlier philosophers of Greece in physics and metaphysics, while allowing the supremacy of Aristotle in "the humanistic sciences," has been shared by many later students. He in a manner anticipated "the Cartesian doubt," as is pointed out by Prof. Carrière, but did not make it the beginning of a systematic theory of knowledge. In all that relates to "theory of knowledge," indeed, it must be admitted that Bruno remains outside the specifically modern philosophic movement. The modern distinction of subject and object, dating from Descartes, could not of course be present to him. This makes it difficult to compare his philosophy with any system that starts from Cartesianism. His general doctrine, when compared with Spinoza's parallelism of the attributes of extension and thought, appears to be predominatingly idealistic; and this brings him nearer in some respects to later philosophy; but his idealism cannot be identified with any form of post-Cartesian idealism. At the same time it is not mere Platonism. Bruno's doctrine of matter in *Della Causa* is alone sufficient to distinguish him from the ordinary Platonists.

The ideas of his philosophy, like those of the pantheistic philosophy of the Renaissance in general, are of course largely drawn from Neo-Platonist sources. And his predecessors in the theory of matter—Avicebron and David of Dinant—started from mediæval Platonism. Bruno, however, does not simply pass on their theory, as has sometimes been assumed, but, while commending them for what they affirm as to the permanence of the material principle of things, finds their usual mode of expression inadequate, as not taking account of the formal principle which is eternally conjoined with matter, but only of accidental forms. With Bruno's doctrine of matter goes his substitution of an

evolution-theory for the emanation-theories of the Neo-Platonists. Here he was probably influenced by the Stoics, and by the earlier philosophers of Greece, whom he constantly cites. Indeed there was no form of speculative thought known to his age that was without influence on Bruno. This receptiveness is joined with an equally remarkable freedom. Of the submission of the spirit to external authority not a trace remains. His laudatory citations from all sources—philosophical and poetical, orthodox and heterodox, classical and biblical—are simply the expression of an intellectual or æsthetic admiration. In a writer of the 16th century this is at first sufficiently surprising; but it is characteristic of the spirit of the Renaissance. The reactionary return of the past is illustrated when, in the next age, we find Campanella, some of whose speculations have so much affinity with Bruno's, laboriously establishing his points by quotations from the Fathers. We moderns, Prof. Carrière says in commenting on this, have no longer any conception of the despotism of authority that then reigned (ii. 240). It ought to be added that for a brief interval and by a small number of minds this despotism had been thrown off, though long efforts were required before the more widely extended emancipation of modern times could be attained and made practically secure.

Whatever criticisms it may have been necessary to make on Prof. Carrière's general view of Bruno's doctrine, the great merits of his exposition are beyond dispute; and much of the spirit of Bruno has passed into the translations of verse from the Frankfort books and the *Eroici Furori*. The life has of course been re-written so as to include the results of all the documents published since 1846. For illustration of the sources and historical relations of Bruno's single ideas Bartholmèss ought still to be read; while Prof. Carrière's treatment of the whole philosophical history of the age supplies fuller information as to his intellectual surroundings and immediate antecedents. The only fault of the chapter on Bruno as a literary and philosophical study is the tendency that has already been remarked to tone down some of his distinctive ideas. That this is not entirely without effect on the details may be briefly shown by comparison of the last pages of Prof. Carrière's systematic exposition of the philosophy (ii. 160-2) with the passage in the dedication of *Dell' Infinito* (Wagner, ii. 12-14) of which it is for the most part a somewhat condensed translation.

Here is a portion of the passage as given by Prof. Carrière:—

"We fear not, therefore, that the multiplicity of things on this earth by the power of some black wandering demon, or by the anger of a thundering Jupiter, should be hurled out of this dome and shattered and dispersed beyond this vault of heaven or crumble to dust outside the starry mantle above us; for nature cannot perish in essence, and vanishes only in appearance, like the air in a burst bubble. *There is no succession of things without an eternal ground, a first and a last.* There are no limits and walls that should confine the infinite and bound its fulness."

The sentences to which these correspond in Bruno are as follows:—

"We fear not that that which is accumulated in this world, by the vehemence of some wandering spirit, or by the anger of some thundering Jupiter, should be dispersed out of this vault or dome of heaven, or shaken and scattered as in dust out of this starry mantle, and the nature of things not otherwise become void in substance than to the appearance of our eyes that air which was comprised within the concavity of a bubble is dissipated; *for there is known to us a world in which for ever thing succeeds thing, neither is there any ultimate profound, from whence, as from the hand of the smith, they should irreparably vanish into nothingness.* There are no limits, terms, margins, walls, that should defraud us or withdraw from us the infinite fulness of things."

The remainder of the passage concludes from the infinite power of God that the universe, or eternal image of God, must be infinite also, on the pantheistic ground that in God will and power, act and possibility, coincide. The last sentences are thus expounded by Prof. Carrière:—

"Not vain is the power of the understanding to add space to space, unity to unity, mass to mass, number to number; thereby it breaks the chain of the finite and raises itself to the freedom of the infinite; thereby it is loosed from the poverty and exults in the riches of life, and no Pluto can hold it imprisoned, no sphere bound it. Nature is an all-fertile mother, *and God is not envious but is love itself.*"

In Bruno they are as follows:—

"So that not vain is this power of intellect which ever will and can add space to space, mass to mass, unity to unity, number to number, by that science that unbinds us from the chains of a most narrow and promotes us to the liberty of a most august empire; that takes us from the believed poverty and narrowness to the innumerable riches of so great a space, of so worthy a field, of so many cultivated worlds; and lets not circle of horizon counterfeited by the eye on earth and feigned by fantasy in the spacious ether imprison our spirit under the ward of a Pluto *and the compassion of a Jove.* We are exempt from the care of so rich a possessor and then so parsimonious, sordid and avaricious a giver, and from the nurture of a so fertile and all-pregnant and then so meanly and miserably parturient Nature."

Now, of course, as Prof. Carrière is not ostensibly translating from *Dell' Infinito,* but is using it as material for his own interpretation, he has a right to make alterations. The words omitted from the passages just quoted, and a sentence praising "Democritus and Epicurus," which is omitted from the intermediate passage, may seem to Prof. Carrière incongruous or not characteristic; as, perhaps, according to his theistic interpretation of Bruno, they are. And he could find support for the words substituted. The reason why his variations in this particular case have been cited is to indicate exactly where he may seem to readers who do not approach the subject with his pre-suppositions to fall short of perfect appreciation of Bruno's way of thinking. Within the limits imposed by the desire to approximate the philosopher of Nola to the Christian mystics, neither his general interpretation nor his detailed exposition could be better.

THOMAS WHITTAKER.

VII.—NEW BOOKS.

[*These Notes (by various hands) do not exclude Critical Notices later on.*]

History of Modern Philosophy. By KUNO FISCHER. *Descartes and his School.* Translated from the Third and Revised German Edition by J. P. GORDY, Ph.D., Professor of Pedagogics in Ohio University. Edited by NOAH PORTER, D.D., LL.D. London: T. Fisher Unwin, 1887. Pp. xvi., 589.

This handsome volume deserves warm welcome, and will, it is hoped, be followed by more than the one other, extending over Spinoza, which is definitely promised. No greater service could be done to English and American students—the thought and deed are American—than to give them a trustworthy rendering of Kuno Fischer's brilliant exposition, so far as he has himself yet been able to carry it through. Whatever exception may be taken to it here and there, it stands apart as the most effective presentment yet made of the lives and work of the heroes of modern philosophy. A portion on Kant, long since translated by Mr. Mahaffy, is all of it that has yet appeared in English, and this was taken from the undeveloped first edition. (The *Bacon*, earlier translated, also from a first edition, by Mr. Oxenford, is an outlying work.) The translation now begun follows the latest edition, which for the author's vol. i. is the third, as has been noted in MIND on appearance of each of its two parts. It is these two parts of vol. i. of the original that have for the present been taken in hand; the (English) volume now issued covering, besides the whole first part (on Descartes, with General Introduction), as much of the second as (after the Cartesians proper, with Geulincx and Malebranche) leaves only Spinoza to be handled at approximately similar length. By the time that the volume on Spinoza is ready, it is to be hoped that the improved (second) edition of the author's vol. ii., on Leibniz, &c., may have seen the light, and that all who are concerned in the present enterprise of translation may feel encouraged to proceed with at least that division of the work, than which none is of greater value (even in first draft), and which is more wanted in English than perhaps any other. A trial of the present volume at various places turns out altogether to the credit of the translator. Though he is fortunate in having an author who writes extremely well, yet even Kuno Fischer's sentences, being German, can at times carry a heavy weight of sail. The translator has done everything that is necessary in the way of reefing; and the general effect of the whole is excellent. This result is the less surprising, because, as Dr. Noah Porter, in a few words of introduction, tells us, the translator, Prof. Gordy, already competent as a German scholar and familiar with philosophical literature, armed himself specially for the present work by devoting some months of critical study to the Cartesian doctrine. Though the translator has not remarked it, the present opportunity may be taken of correcting one error in Fischer's exposition. It is where Descartes is made to say (pp. 322, 323 of the translation, which with slight omission follows Fischer): "I have first asked myself what one really means by 'mathematics,' and *wherefore* arithmetic and geometry [*only*] are considered parts of it, *and not* astronomy, music, optics, mechanics and so many other sciences, *with just as good right*". Instead of the words here italicised, what Descartes really says in the *Regulæ* is "quare non modo . . . sed etiam," conveying an obviously different meaning.

Elements of Physiological Psychology. A Treatise of the Activities and Nature of the Mind from the Physical and Experimental Point of View. By GEORGE T. LADD, Professor of Philosophy in Yale University. London: Longmans, Green & Co., 1887. Pp. xii., 696.

Critical Notice of this important work, published simultaneously in England and in America, will presently follow. Let it suffice for the present to state that, after a short Introduction (pp. 1-14), it is divided into three parts: i. The Nervous Mechanism (pp. 17-236); ii. Correlations of the Nervous Mechanism and the Mind (pp. 239-582); iii. The Nature of the Mind (pp. 585-613).

The Problem of Evil. An Introduction to the Practical Sciences. By DANIEL GREENLEAF THOMPSON, Author of *A System of Psychology.* London: Longmans, Green & Co., 1887. Pp. viii., 281.

Mr. Thompson here follows up his *System of Psychology*, reviewed in MIND, Vol. x. 115, with a treatise on Ethics, or, more exactly, on Ethics and Politics. Starting from a basis of hedonistic psychology, and adopting the utilitarian criterion of "the maximum happiness of the greatest number," he puts his general problem in the form, By what method or methods shall we seek to eliminate evil? The book is divided into six parts:—i. "The Nature of Evil"; ii. "The Elimination of Evil"; iii. "The great Theological Superstition"; iv. "The Institutional Fetich"; v. "The Socialistic Fallacy"; vi. "The Root of Moral Evil". The "two complementary precepts" which "must for ever govern all effective effort for the elimination of evil and consequent amelioration of mankind" are (1) "Aim at the minimum of extrinsic restraint and the maximum of liberty for the individual"; (2) "Aim at the most complete and universal development of the altruistic character". Socialistic proposals for the reform of society are rejected on account of their collision with the first of the two precepts. "The root of moral evil" is egoism; and this is to be attacked by altruistic action on the part of individuals. The author, while still remaining at the point of view of the older experientialism unmodified by evolutionary or other later ideas, shows himself anxious to meet the objections of Green to utilitarian ethics; devoting a chapter (pt. ii., ch. 9, pp. 45-77) to an examination of the *Prolegomena.* As in the *System of Psychology* (though Green was not there referred to), a real if partial answer is at some points given to his objections to English philosophical method. In the former work, for example, the notion of "the self-distinguishing subject" as not identical with particular objects of consciousness was arrived at by psychological analysis. It was similarly shown how, consistently with hedonistic psychology, desires arise for objects instead of for pleasures directly. The analysis of desire is now repeated, and application of it is made against Green's contention for the priority of desire to pleasure. "The hedonists are wrong," it is concluded, "where they assert that the *object* of volition and action is always pleasure, but right in their claim that it is always the *end* of volition and action." Mr. Thompson protests against Green's view "that a Benthamite would repudiate as unintelligible the notion of an absolute value in the individual person," and would maintain instead the absolute value of every pleasure in itself. "Whatever a Benthamite ought to believe," he says, "I do not imagine one has been actually found who claimed that pleasure meant anything at all, save with reference to a person enjoying pleasure." "In the most egoistic form of hedonism, the personal Ego is of the supremest value," and, by sympathy, the hedonist may transfer this idea of value to all other persons. These arguments are in one way the more deserving of attention because Mr. Thompson remains so completely at the unmodified utilitarian standpoint. There is special interest

just now in his proof, from this standpoint, that individualism has not only been actually, but is logically, quite compatible with altruism. At the same time his content with the older ethical doctrine prevents him from defending his general philosophical position as effectively as he might otherwise have done. Whatever it may still be possible to say in favour of individualism, it is no longer necessary for an experientialist to found his ethics on an individualistic psychology. If the theory of society implied in Green's *Prolegomena* is not really bound up with his metaphysics, and if that theory is substantially true, an experientialist obviously puts himself at a disadvantage in contending without discrimination against Green's doctrine as a whole. Mr. Thompson partly sees this, and describes quite candidly the impression Green's doctrine makes on him. "With a little construing and amending," he says, "we should have no difficulty in reading out of it a sound, respectable utilitarianism." Then he proceeds to make objection to the points in which it seems to him to differ for the worse from the ethics of hedonism, *viz.*, in the "æstho-egoism" of its principle (since *self*-satisfaction is said to be always the end), and in the "*circulus in probando*" by which it identifies the moral good for the individual with social good. His objections are often acute; but he fails to see that there can be no real "construing and amending" of these doctrines in the sense of a different philosophy so long as the attempt is made from a basis of pure individualism.

The Principles of Morals. Part II. (Being the Body of the Work.) By Thomas Fowler, D.D., President of Corpus Christi College, Wykeham Professor of Logic in the University of Oxford, and Honorary Doctor of Laws in the University of Edinburgh. Oxford: Clarendon Press, 1887. Pp. xii., 370.

Prof. Fowler now publishes the promised continuation of the ethical treatise begun by him in conjunction with the late Prof. Wilson, of which the introductory part was noticed in Mind, xi. 436. "My own share in this portion of the book," he says, "has now become so preponderant, and, in the course of revision and completion, so many new questions have arisen which I never had the opportunity of discussing with Prof. Wilson, that, though I should myself have been content simply to reverse the order of the names, it has seemed to others better that this Part should appear in my name alone." A detailed account of Prof. Wilson's share in it is given, and the distribution of the authorship of Part i. is briefly described. Prof. Fowler has "freely made use, throughout this work, of the essay entitled *Progressive Morality*," published in 1884 and reviewed at length in Mind, x. 266, but has "not by any means incorporated it"—the two works being different in aim. Critical Notice of both parts of the present work will follow.

Metretike; or, The Method of Measuring Probability and Utility. By F. Y. Edgeworth, M.A., F.S.S. London: The Temple Company, 1887. Pp. 66.

The author sends a short statement of the drift of this dissertation, which will be found printed in the next division of the present No. (p. 484).

Realistic Philosophy defended in a Philosophic Series. By James M'Cosh, D.D., &c., President of Princeton College. I. Expository; II. Historical and Critical. London and New York: Macmillan & Co., 1887. Pp. v., 252; v., 325.

The parts of Dr. M'Cosh's "Philosophic Series," "didactic" and "historical," have already been noticed in Mind as they appeared separately.

They are now published in two volumes, each furnished with a "General Introduction," and the first ("Expository") volume containing an additional (or not previously noticed) part on "Certitude, Providence and Prayer" (pp. 205-252). The introduction to vol. i. (pp. 1-26) deals with the question "What an American Philosophy should be"; the introduction to vol. ii. reviews historically, "Realism: its place in the various Philosophies". "The time has come," the author thinks, "for America to declare her independence in philosophy." American philosophy is to be "a Realism, opposed to Idealism on the one hand and Agnosticism on the other". The historical review of the philosophies is intended to show "that there is an avowed or latent Realism running through nearly all of them". Accordingly the "final philosophy" will be a "discriminate Realism" in which "all that is established in the previous philosophies will be embraced".

Naturae Veritas. By GEORGE M. MINCHIN, M.A., Professor of Applied Mathematics in the Royal Indian Engineering College, Cooper's Hill. London and New York: Macmillan & Co., 1887. Pp. 67.

This is a "scientific romance" of the type made familiar by *Micromégas*. The first part ("Stellar Visits") is in prose, the second ("The Revelation from Aldebaran") is poetical. Its idea, which is worked out with much ingenuity, is that in other stellar systems the distribution of the various energies of the universe may be quite different from their distribution in the solar system, and that beings with other organs than ours may know energy under other forms. The effect of this knowledge might well be that, instead of the principle of "the dissipation of energy," a principle of "the circulation of energy" should be seen to hold good; heat being, perhaps, to those who can observe more of the processes of nature, an eminently transformable kind of energy. "In none of the Stellar Systems which I visited," the narrator says, "could I find any confirmation of my belief in the principle of the Dissipation of Energy, either in the opinions of the various Beings with whom I conversed, or in the facts which they related to me as within the domain of their own knowledge. These facts would of themselves suffice to convince me that the transformation of all forms of Energy into Heat is not final; and that, although Men, with their limited field of experience and scanty modes of perception, are unable to trace the process, the principle which really holds throughout the Universe is that of the *Circulation*, or, as the Al Fardian expressed it, the *Resurrection*, of Energy; but the authoritative Revelation of the Aldebaran Spirit places the matter beyond doubt. What has gone before has shown me the danger of making a sweeping generalisation for this vast Universe from the scanty facts which we are able to gather in the Solar System. The conclusion is of too tremendous a magnitude to be at all justified by the existing state of our knowledge, or any that we are ever likely to attain." The poetical "Revelation from Aldebaran" first throws the inquirer into despair by showing him that if, as he supposes, the frame of the material universe is to be destroyed, his hope that mind will still endure is a vain imagination; then refutes his opinion, founded on the limited experience of an inhabitant of the solar system, that the universe is destined to become a lifeless mass of uniform temperature; and finally expounds to him the possibilities there are of indefinite progress of mind in the conscious beings of the universe, although the individual consciousness may disappear with the organism, and although, for the punishment of "the crooked will" that rejects "the higher way," there is "regression ever hovering in the rear".

The Theories of Anarchy and of Law. A Midnight Debate. By H. B. BREWSTER. London: Williams and Norgate, 1887. Pp. xii., 152.

Four friends, "Ralph," "Wilfrid," "Lothaire" and "Harold," having wearied of desultory philosophical talk, agree to explain to one another their "characteristic vein of thought"; seeing that, in the absence of real understanding of this, "perhaps each one of us, if the truth were known, looks upon the sayings of his neighbour somewhat as on brilliant sparks destined to light up the darkness one instant and then die out, whereas his own wisdom seems to him a steady, continuous light, because he knows where and how high the fire burns whence it emanates". The result of this agreement is a debate continued on two nights till dawn, in which the debaters strive, not to convert one another but to attain perfect clearness as to their ultimate views of things. "Ralph" is the evolutionary moralist, who asserts the supremacy of a universal law of progress to which individuals must conform in order to attain happiness. "Harold" is the "anarchist" or antinomian, who maintains that "there are rules and laws, but there is no such thing as the Rule or the Law," and who would reserve a place of honour for "the holy ghost of destruction". "Lothaire," personally inclined to a mystical acceptance of some form of religious faith, and disposed to hold that logically this would be defensible, does not insist on his own idea, but seeks rather to explain his friends more clearly to each other. "Wilfrid," the "atheorist," contends that all philosophy—and science too—is "a deed of speech," and has simply a practical or poetical value, all ideas having equal theoretical justification; even the principle of the creative action of speech being, as soon as it is laid down as a separate principle, an "idol" like all other principles, and only defensible because for itself it claims to be nothing more than one idol along with others. The author treats all his characters with the utmost fairness. Although it is, no doubt, possible to detect a "vein of thought" of his own running through the dialogues, he does not display this by allowing any one of the debaters a victory over the rest. The "debate" is what it sets out to be, a disinterested exhibition of certain types of thought about life as proceeding from the predominance of particular moods. It has both literary charm and philosophical suggestiveness.

The Conception of the Infinite, and the Solution of the Mathematical Antinomies: A Study in Psychological Analysis. By GEORGE S. FULLERTON, A.M., B.D., Adjunct Professor of Philosophy in the University of Pennsylvania. Philadelphia: J. B. Lippincott & Co., 1887. Pp. 131.

The author here publishes in its complete form a discussion of "the conception of the infinite," the concluding chapter of which has already appeared as an article in MIND (Vol. xi. 186). His main contention is that we have "the notion of *unlimited possibility of quantity*,—a notion which, be it marked, is strictly qualitative"; and that this, and not the vain effort to imagine an infinite series as a whole, is the essential constituent of the mental state that has reference to infinity. What marks this state off from other qualitative conceptions is "its necessary reference to quantity, though not itself quantitative". By this exclusion of the notion of "a quantitative whole" from the conception of infinity, the difficulties as to the comparison of infinites are first cleared up. Not being quantitative wholes, infinites admit of no quantitative comparison among themselves; while they are alike in respect of the quality of allowing progression, in at least one direction, without end; for, this being supposed, a limit anywhere else does not prevent them from being infinites all the same. "In general, wherever the limit is removed in any one direction, whether in the case of lines, of surfaces or of solids, the object can no longer be regarded as a quantitative whole, and is not to be considered finite". In chapters iii. and iv. ("The Antinomies of Hamilton," "Kant, Mill and Clifford," pp. 34-

76) the position is taken up that in each case one of the opposed positions of Hamilton's (and of Kant's) antinomies with respect to the infinite of space and time, is really self-contradictory, and the other adequately conceivable; and suggestions of the true doctrine of the qualitative nature of the conception of the infinite are found in Kant, and still more in Mill and Clifford. The short penultimate chapter (v., pp. 77-89) on "The Conceivable and the Existent" is intended to make clearer what it is precisely that the author is trying to prove; which is, not the *existence* but the *conceivability* of the infinite. The infinity of space, for example, may be conceivable, and yet it does not follow either that space is infinite or that we can know it to be infinite. All that has been done is to get rid of a preliminary objection to entertaining any question as to its infinity. The last chapter ("The Conceivability of the Infinite"), as readers of MIND will remember, aims at showing by quotations from leading representatives of modern Nominalism, that "the operation of conceiving an infinite line" by abstracting the idea of a possible endless progression, is "in nature identical" with "the operation of forming a concept" as they describe it.

Some Problems of Philosophy. By ARCHIBALD ALEXANDER, Professor of Philosophy in Columbia College. New York: Charles Scribner's Sons, 1886. Pp. 170.

This little book consists of a series of essays in which the author states very suggestively some of the leading problems of philosophy, with the aim, first, of making the opposing positions clear, and then of working towards a doctrine that may be described as Critical Idealism. In the opening essay ("The Difficulties of Philosophy") he sets forth the "Dogmatic," the "Sceptical" and the "Critical" positions; his purpose here being to insist upon "the supreme necessity of thorough analysis before a metaphysical principle can be established". "In proportion as the difficulties of pure Metaphysics are recognised," he goes on, "are not cast aside by the sceptic nor overlooked by the dogmatist, the other branches of Philosophy will be progressive. Psychology should be especially benefited, for more than half the differences between different schools of Psychology are differences with respect to metaphysical doctrines which should not impede the tranquil progress of the inductive science of mind". An essay on "The Problem of Physiological Psychology" (vi.) is particularly good. The problem of the relations of Mind and Body is exactly appreciated, and the importance for psychology of the study of the physiological conditions of consciousness, without neglect of introspection, is well brought out. The short essay on "The Problem of the Will" (ix., pp. 77-9) is also very effective. For the author, the fundamental problem of philosophy is the nature of causation, and to this he finds himself constantly brought back in his discussion of other questions. The last essay (xviii., pp. 123-70) is an express discussion, historical and critical, of "The Doctrine of Cause and Effect". The true solution of the problem of causation, the author decides, can only be arrived at after a previous determination of the true theory of knowledge. We must not begin by dogmatic propositions about Nature. "We must explain the principles of knowledge first, for Nature is only what we know." The law of causality is then found to be "a law of knowledge, *i.e.*, a law of judgment—a form of Thought". "The necessity of that judgment depends on the existence of mind," of which nature, as we know it, is the product.

(1) *Outlines of Psychology.* (2) *Outlines of Æsthetics.* (3) *Outlines of Logic and of Encyclopædia of Philosophy.* Dictated Portions of the Lectures of Hermann Lotze. Translated and Edited by GEORGE T. LADD, Professor of Philosophy in Yale College. Boston: Ginn & Co., 1886-7. Pp. xi., 157; xii., 113; viii., 184.

In the order given, Prof. Ladd has here completed his purpose of translating the whole series of Lotze's *Dictate*, except those on the Philosophy of Nature and on German Philosophy since Kant; the earlier pieces of the translated series having before been mentioned in MIND. He is not only responsible for the whole translation of the present parts, but has, in fact, executed all with his own hand, except some sections of the *Logic*. This guarantees the philosophical intelligence with which an enterprise of difficulty as well as importance has been carried out to its close; while of the faithfulness of the rendering throughout, it may be said that it has been only too great, since Lotze's sentences, instead of being given exactly as they stand, could well have borne to be broken up at need, in the admirable fashion of the Oxford translation of the *System*. (We have, by the way, noted in the *Outlines of Metaphysics*, since it was mentioned in MIND, one awkward mistranslation at p. 5, l. 11, where "modes of experience" is given, by an obvious confusion, for *Ver*fahrungsweisen.) All the claims that Prof. Ladd makes for each of the pieces in turn are to be heartily supported. The *Psychology*, in particular, is a real gift to students. It may be a surprise to some to find how nearly it gives, within short compass, the whole gist of bk. iii. in the large *Metaphysic* of the *System*. This bk. iii. is indeed somewhat of an anomaly where it stands, being by no means confined to the purely rational psychology to be there expected. Certainly the *Outlines of Psychology* have to be added to the *Outlines of Metaphysic* before the student has in abstract the whole of the doctrine that Lotze ended by treating as *metaphysical*. In the old *Metaphysik* of 1841 it was not Psychology that formed with Lotze the third and last division of his subject, but such a treatment of the "Truth of Knowledge" as in the *Outlines of Metaphysic* is still called Phenomenology, though he had meanwhile already come to adopt the traditional names of Ontology and Cosmology for his first and second divisions.

The Foundations of Ethics. By JOHN EDWARD MAUDE, M.A. Edited by WILLIAM JAMES, Professor of Philosophy in Harvard College. New York: Henry Holt & Co., 1887. Pp. iv., 220.

The present work, by an author who died prematurely (he was born in 1855 and died in 1885), deserves, by its intrinsic interest, all the attention that Prof. James claims for it in his short preface. It has, above all, as he points out, the merits of "clearness in making distinctions," and "logical consistency in the use of them when made". The brief sketch of the author's life that is prefixed will increase the regret which all readers must feel that he should only have had time to give this "one glimpse of his quality". The distinctions that Maude takes for the basis of his ethical doctrine are contained in his definitions of these four pairs of terms:—(1) Good and Bad, (2) Right and Wrong, (3) Moral and Immoral, (4) Virtue and Vice. Of these only the last, he holds, is properly ethical. "Good" is that which causes pleasure, and so is an objective character of things or actions, and not a subject of properly ethical judgment, which can refer only to the agent. "Right" means conformable to law; "moral" means conformable to good custom. The proper subject of ethics is virtue or vice, for which alone the agent is truly responsible. All virtue consists in "effort" or "action" put forth in opposition to desire or impulse, and all vice in the absence of effort. Since it is impossible for anyone but the agent himself to determine the intensity of the effort put forth, a science of pure ethics is impossible. There is, however, a science of "good," and this science is that to which Utilitarians have been accustomed to give the name of ethics. Pleasures differ only quantitatively; yet on account of the differences among the perceptions with which they are combined and

the necessity of estimating them by sense and not by strictly rational comparison, no hedonical calculus is possible. Rational calculation, however, is possible when, instead of pleasures, "utilities" or the means to pleasures are compared. "The effort of virtue is exerted in trying to make that idea the strongest as an idea of a cause of pleasure, which reason judges is the best." It is not merely in opposition to the desires of sense, by which the value of that which gives immediate pleasure is exaggerated, that virtuous effort is necessary. "Sympathy" also is a "natural impulse". It is a "good" but not a "virtuous" impulse, for no impulse as such is virtuous; all impulses, the higher as well as the lower, are in themselves "involuntary and unreasonable". Sympathy, therefore, may have to be resisted by virtuous effort as much as any other natural impulse. Virtue is in the end definable as effort made by "the personal will" against the "natural impulses," for the sake of the interest of "the self" as pointed out by reason; the "self" of which the interest is to be sought being not "the private or exclusive self," but "the highest self," the self so conceived "that nothing shall be foreign or strange to me, because all things are part of myself, and I am part of all".

Sensation et Mouvement. Études expérimentales de Psycho-mécanique. Par Ch. Féré, Médecin de Bicêtre. Avec 44 graphiques dans le Texte. Paris: F. Alcan, 1887. Pp. 164.

M. Féré's monograph consists in the first place of a series of varied and exact experiments made both on normal and pathological subjects with a view to determining the relations of sensation or peripheral excitation, action, or the putting forth of muscular energy, and the distribution of blood in the system. The most general result of his researches is that "all peripheral excitations, whether they bear on the organs of general sensibility or on those of special sensibility, determine first a functional super-activity, translating itself, especially on the excited side, by an increase of general and special sensibility and a parallel increase of muscular force, which coincide with a dilatation of the peripheral vessels manifesting itself by an increase in the volume of the limbs" (p. 120). Motion, therefore, may be made the common measure of sensation, and all sensation may be estimated to a certain extent quantitatively by the dynamometer. When excitation is excessive or long-continued, exhaustion follows. Pleasure is the accompaniment of increasing energy of the organism or of a high state of its "potential energy," pain of diminishing energy or of a low state of potential energy. Happiness, individual or social, is summed up in the "accumulation of force". Subjects presenting "hereditary or acquired degenerescence," manifest in an exaggerated form the phenomena of "exhaustion". Among the various forms of "degenerescence," the author would include pessimism, and in some brief ethical applications of his results he arrives at the conclusion that "there is only one cardinal virtue: energy, manifesting itself by production under all its forms and by moderation of the needs of excitation and of the desires," while "vice is all that destroys". He has some remarks at the end, not in the usual strain of mental pathologists, on the relations of criminality, "degenerescence" and punishment. The volume is so full of interesting experimental results of which no more succinct summary than the author's is possible that injustice seems to be done by selection of single positions.

Esquisses de Philosophie critique. Par A. Spir. Avec une Préface par A. Penjon, Professeur à la Faculté des Lettres de Douai. Paris: F. Alcan, 1887. Pp. xi., 189.

The author, whose collected German works were noticed in Mind xi.

297, has here composed in French a series of "Sketches" giving an outline of his philosophy. He is by birth a Russian, as the introducer of the present work tells us. The clearness and vigour of style by which M. Penjon thinks it likely to appeal to French readers, it has in common with the author's German works. His general philosophical doctrines have been briefly described in previous notices in MIND. The articles of the present volume, which, though not containing anything new in substance, is in form independent of the German works, are—i., ii., "Considerations on the Aim and Object of Philosophy," iii., "On Moral Liberty," iv., "Relations of the Soul and the Body," v., "Individual Life and Social Life," vi., "The Norm of Thought".

Les Sentiments Moraux au XVIe. Siècle. Par ALBERT DESJARDINS, Professeur à la Faculté de Droit de Paris. Paris: Pedone-Lauriel, 1887. Pp. xii., 486.

The author, well-known by his work on *The French Moralists of the 16th Century* (1870), here passes from the moral doctrines of the period as expounded by its writers to "the moral sentiments as they existed in those who lived and acted in the same country and at the same time". The object he has set before himself is so to group the facts as to present a picture of the moral sentiments of the *period*, and not merely of individuals; actions of extraordinary heroism or criminality, for example, being taken not simply in themselves as part of the facts from which collectively the age is to be judged, but with reference to their effect on the minds of contemporaries. M. Desjardins has succeeded perfectly in this aim. Under the heads of "Morals and Religion" (bk. i., pp. 1-106), "Moral Sentiments in general" (bk. ii., pp. 107-253), "Moral Sentiments proper to Public Life" (bk. iii., pp. 255-320), "Moral Sentiments proper to certain situations" (bk. iv., pp. 321-478) he gives—to a great extent in the very words of contemporary historians and men of affairs—just such a detailed and impartial account of the average modes of feeling and judging as is promised in the preface. The book, as may be inferred from this description, is not directed simply to the proof of theses of the author's own; but what seems above all to have awakened his interest in the period is the opportunity it gives for studying "the influence on morality of a decline in religious belief". The old religious authority, and along with it the old political authority, being weakened, the result was, he finds, the substitution, among the lettered class, of a morality derived from ancient moralists for the authoritative theological morality. At the same time, along with the new or revived conceptions of "state" and "country," the modern sentiment of "patriotism" arose, that should displace the sentiment of loyalty to a feudal chief. The immediate result of the prolonged religious and political anarchy of the period of civil wars in the latter part of the century, was a desire for the re-establishment of any religious and political authority that could control the forces that had been let loose; for the old religious faith and the feeling of reverence for the hierarchical order of mediæval society were not dead. The sentiment of patriotism or devotion to the state thus came to take the transitional form of devotion to the king, in whom the state was personified. Hence sprang the political absolutism of the 17th century, as from the desire for a restored religious authority sprang its "Catholic Renaissance".

Spiritualisme et Libéralisme. Par M. FERRAZ, Professeur Honoraire de la Faculté des Lettres de Lyon, Ancien Membre du Conseil Supérieur de l'Instruction publique. Paris: Perrin, 1887. Pp. iii., 469.

After having, in two former volumes, written the history of "positivist" and "traditionalist" philosophy in France in the 19th century, the author now goes on to the history of the spiritualist school, of which he is himself an adherent. His method is to deal separately with the chief writers of the school (living writers being excluded), in chapters that are chiefly biographical and expository, but also to some extent critical. The writers dealt with are Mme. de Staël, Laromiguière, Maine de Biran, Ampère, Royer-Collard, De Gérando, Victor Cousin (pp. 181-278), Théodore Jouffroy (pp. 279-361), Guizot, Charles de Rémusat, Adolphe Garnier, and Émile Saisset. In a concluding chapter ("Developments of Spiritualism," pp. 441-66), a brief account is given of some less known members of the school and of its influence. While conceding that it has neglected science, especially physiology, and has been too opportunist in politics and education, M. Ferraz contends that, in spite of all its defects, "spiritualistic philosophy is still to-day the only philosophy that can satisfy elevated minds and serve as the basis of free institutions". For the doctrine of inviolable personal rights is a corollary of the rationalism of the spiritualist school, but cannot be based on any form of sensationalism. Hence the title of the volume—"Spiritualism and Liberalism," which has reference also to the fact that the writers dealt with were all adherents of the constitutional doctrines of the early part of the century. In the actual treatment of his subject, the author gives most attention to psychology, and his account, in some of the earlier chapters, of the way in which new psychological doctrines came to be substituted for those of Condillac, has much scientific as well as literary interest.

Nouvelles Études familières de Psychologie et de Morale. Par Francisque Bouillier, Membre de l'Institut. Paris: Hachette, 1887. Pp. iii., 341.

These studies are a sequel to the author's volume noticed in Mind x. 306; differing principally, as he points out, by some incursions into the region of practical politics (ii. "Comment va le Monde, ou Étude sur la Lâcheté," iii. "Corruption de la Langue par la mauvaise Foi," v. "Patriotisme et Fêtes publiques, ou Enseignement historique populaire"). The psychological studies (i. "De la Justice historique," iv. "De l'Oubli," vi. "Amour de Soi, Amour des Autres") are pieces of exact analysis without parade of technical apparatus, and are good examples of the author's method. In the first, he argues that the historian ought not to be content with simply narrating facts, but has to pass moral judgment on them; the ideas of justice and injustice being applicable from the beginning of history. Judgments must of necessity be pronounced with reference to the average morality of the present day, but must be graduated according to age and place. The general rule is, "indulgence for the past, severity for the present". This rule receives some practical illustration in the political studies. The last study, which is partly ethical, has for its conclusion that "love of others" is not in reality opposed to "love of self," but is its continuation, while "egoism," in the bad sense, is its perversion. Love of others, being based on the feeling of personal identity, does not imply identity of substance of all beings, as is contended, for example, by philosophers so different as Schopenhauer and M. Secrétan, but is sufficiently explained by resemblance. For a certain degree of sympathy, resemblance in the mere fact of sentiency is enough. The most interesting study is probably the fourth, which contains in its last section an extremely good defence of the psychological hypothesis of "latent ideas" as the true explanation of memory and its degrees.

La Filosofia Monistica in Italia. Per E. Morselli, Direttore della *Rivista di Filosofia Scientifica.* Milano-Torino: Fratelli Dumolard, 1887. Pp. 42.

Prof. Morselli here sets forth his view of the true nature of philosophy, as distinguished from "metaphysics" on the one hand and the special sciences on the other. It is essentially, as the Positivists contend, a synthesis of the sciences; but not only has it the unity of method conceived by Positivism, but also the unity of doctrine of "evolutionism". Further, the evolutionism of scientific philosophy is monistic; for while it makes no metaphysical affirmation as to the nature of reality, it regards the series of phenomena as unbroken, and holds that all knowledge is continuous from the first empirical observation of facts to the highest generalisations attainable. This conception the author defends both against scientific specialists, who will not hear of philosophy at all, and against those who, in succession to Rosmini, Gioberti and Mamiani, oppose to Positivism a "metaphysical" doctrine which they claim is the "national philosophy of Italy". First he protests against the idea of maintaining special national philosophies; but if there is any Italian "national philosophy," this, he contends, is not the spiritualism of the first half of the 19th century. Far better than the philosophical ideas, neither original nor fruitful, of that period, Italy may claim the initiation of the modern experimental method by Galileo, and of the historical sciences by Vico, and the conception of a monistic theory of the universe by Giordano Bruno. To such thinkers as these, if it wishes to be truly national, Italian philosophy must return.

Briefe von und an Hegel. Herausgegeben von Karl Hegel. In zwei Theilen. Erster Theil: Mit einem Porträt Hegel's. Zweiter Theil: Mit einem Facsimile Hegel's. (G. W. F. Hegel's *Werke*, Vollständige Ausgabe, 19. Bd.) Leipzig: Duncker & Humblot, 1887. Pp. xii., 430; 399.

This collection of letters from and to Hegel makes the nineteenth volume of the "Complete Edition" of the Works. The editor (Hegel's son) had long since proposed to republish the correspondence contained in vol. xvii., with additional letters of Hegel himself and a selection from the letters of his correspondents; but it has only recently become possible, through the necessity for the republication of the volumes of the Works that were out of print, to undertake this enlarged edition. The correspondence not previously published is larger in quantity than all the rest, and of no less interest; including early letters to Schelling, an important part of the correspondence with Niethammer, and letters from Hegel to Cousin. All the correspondence is arranged in chronological order and illustrated with sufficient biographical notes and introductions. The orthography of the original letters has been preserved as marking the period.

Geschichte der christlichen Ethik. Von Dr. W. Gass. Erster Band: Bis zur Reformation. Zweiten Bandes erste Abtheilung: Sechszehntes und siebzehntes Jahrhundert; Die vorherrschend kirchliche Ethik. Zweiten Bandes zweite Abtheilung: Achtzehntes und neunzehntes Jahrhundert; Die philosophische und die theologische Ethik. Berlin: G. Reimer, 1881, 1886, 1887. Pp. xviii., 457; xvi., 372; xvi., 386.

The first part of the second volume of Dr. Gass's history of Christian Ethics, mentioned in the last number of Mind, has been quickly followed by the second part, which completes the whole work. The first volume (the title of which is also given above) had already appeared in 1881. The author is known by histories of Protestant Dogmatics and of the Symbolism

of the Greek Church, and thus is well equipped for the history of theological ethics which occupies the greater portion of these volumes. The last published Part includes rather more than the title appears to indicate. Professing to treat only of the 18th and 19th centuries, it gives some account of the philosophical as distinguished from the theological ethics of the 17th century (the exclusively theological ethics of the 16th and 17th centuries being treated in the preceding Part). The objection may also be made that it is not concerned with exclusively Christian ethics; that since all the more important ethical philosophers of modern times, whatever their attitude towards Christian theology, are treated of at greater or less length, the volume might seem to require a different title. This would be the contention of Prof. Ziegler, for example, whose volume on Christian Ethics (noticed in MIND No. 45, p. 146) is referred to in terms of praise by Dr. Gass. There is much to be said for the plan of closing that part of the work with the rise of Humanism, in order to mark that from that period Christianity "ceases to be everything". Dr. Gass, however, has guarded against this objection. Modern philosophy, he contends, is as a whole correctly described as "Christian" because it has sprung up on Christian ground, and because in modern times there has been constant reciprocal action between theology and philosophy. His own view is that theological and philosophical ethics tend to a final harmony; his theological position being that of liberal Protestantism. Vol. i. begins with a prefatory section (pp. 1-48) consisting (after a brief introduction) of two chapters on "Ancient Ethics" (Socrates and Plato, Aristotle, the Stoics, Neo-Platonism) and "Biblical Ethics". It is then divided as follows:—Section i. "The Age before Constantine" (pp. 49-107); ii. "The 4th to the 8th Century" (pp. 108-241); iii. "First Period of the Middle Age: 8th to 11th Century" (pp. 242-68); iv. "Second Period of the Middle Age: 12th and 13th Centuries" (pp. 269-367); v. "Third Period of the Middle Age: 14th and 15th Centuries" (pp. 368-457). The last chapter of this section (pp. 437-57, "Voices out of Byzantine Theology") describes the ethical doctrine of some representatives of the Greek Church. The contents of the first part of vol. ii. have already been indicated in the last number. Both parts of this volume are divided according to subject rather than chronology. Section i. (pp. 1-96) of part ii., for example, is entitled "The Pre-Kantian Development," but brings down its account of English moralists (in chap. i.) from Hobbes to Prof. Sidgwick, Mr. Spencer and Mr. Stephen, and its account of French moralists (in chap. ii.) from Malebranche to Comte. The rest of the volume, from chap. iii. of this section to the end of the book, is concerned exclusively, or almost exclusively, with German writers, theological and philosophical. The author's general conclusion is that the distinctive ideas of ancient and Christian ethical systems have first been put in their true relations as a consequence of the development from the Reformation onwards. The character of the morality of the Gospel as distinguished from pagan morality consists in the demand that man should not only *act* well but *be* good. The last stage of the development of the Christian character is "holiness," in which "morality" and "piety" are united, so that "the old conflict of autonomy and heteronomy can no longer exist". Historically, ancient ethics, in its effort to express morality systematically, started from the conception of "virtue". The conception of "duty" and "law" was added afterwards. Scholasticism, proceeding, so far as it aimed at scientific form, from ancient ethics, developed its ethical doctrine as a theory of virtue and vice. Protestantism brings the conceptions of "virtue" and "duty" together and puts them in various relations, till at length they are seen to be co-ordinate. There can be no "collision of virtues". All casuistry arises on the ground of "duty". Conflicts of duties are to be

resolved in the last resort by an immediate appeal to conscience. Finally, morality, besides being considered as it is active *in* man and as it expresses itself outwardly so as to be brought within a scheme of classification of virtues or duties, must be considered in detail in its relation to nature and to social life ; every department of life being viewed in relation to its appropriate duties and virtues, and regarded as destined to be a "dwelling-place of love," the supreme expression of Christianity.

Psychologie in Umrissen auf Grundlage der Erfahrung. Von Dr. HARALD HÖFFDING, Professor an der Universität in Kopenhagen. Unter Mitwirkung des Verfassers nach der zweiten dänischen Auflage übersetzt von F. BENDIXEN, Gymnasiallehrer. Leipzig : Fues (R. Reisland), 1887. Pp. vi., 463.

This work of a Danish psychologist appeared first some three or four years ago, and, being now somewhat extended in a second edition, by continued study on the author's part and by some experience of its academic use, is also laid before a wider public in a German translation. While following the now generally accepted lines for treatment of the subject, it has characteristics which give it a special interest for English readers. Critical Notice will follow.

Der Philosophische Kriticismus u. seine Bedeutung für die positive Wissenschaft. Von Prof. A. RIEHL. Zweiter Band, zweiter Theil (Schluss), "Zur Wissenschaftstheorie u. Metaphysik". Leipzig : Engelmann, 1887. Pp. xi., 358.

Here is completed a very important philosophical work which hitherto has failed of notice in MIND. The first volume, on "History and Method of Philosophical Criticism," appeared as far back as 1876 ; followed by the first part of the second volume, on "The Sensuous and Logical Foundation of Knowledge," in 1879. Some time afterwards the importance of the work came to be known, but in view of the swiftly promised conclusions of the second volume and of the whole book notice was deferred. Only now, after an interval of eight years, has the author been able to surmount various hindrances and round off his theory to his own satisfaction. The general conception of Philosophy with which, in the present crowning section of his work, he passes to the consideration of the problems first of general Theory of Science and then of Metaphysic, got earlier expression in a lecture, "On Scientific and Non-scientific Philosophy," when he assumed some years ago his present academic post in Freiburg. As detailed review will now, it is hoped, shortly follow, let it suffice for the present to have merely chronicled these few facts. The work has immediate relation to the questions of general import that are at present uppermost in men's minds. While informed with wide historical consideration, it is essentially of the time, timely.

Geschichte der Philosophie im Umriss. Ein Leitfaden zur Uebersicht von Dr. ALBERT SCHWEGLER. Vierzehnte Auflage, durchgesehen u. ergänzt von Dr. R. KOEBER. Stuttgart : C. Conradi, 1887. Pp. 372.

It should interest those who have known Schwegler's effective sketch of the History of Philosophy, either in the original or in Dr. Hutchison Stirling's not less effective translation (with supplement), to note how the book has gone on being used in the land of its birth till now, in its 40th year, it has reached its 14th edition. This latest reprint, besides having inwrought with it short bibliographical additions, contains a large development of the three-page section on "Christianity and Scholasticism" where Schwegler came most notably short ; the section now extending to more

than twenty pages such as his, and giving a view of the whole middle period in something like keeping with other parts of the work. There is also added, at the close, a considerable account (pp. 342-72) first of Schopenhauer and then of v. Hartmann. The editor writes as if in close sympathy with the latter thinker, and finds accordingly none but these two to be added to Schwegler's tale, which broke off with Hegel. It seems regrettable that the additions throughout, while worthy of all commendation, have not been in some typographical way marked off from Schwegler's text.

Grundriss der Geschichte der Philosophie. Ein Leitfaden zum Studium der Geschichte der Philosophie u. zur Rekapitulation. Von Prof. Dr. L. Rabus. Erlangen: A. Deichert, 1887. Pp. xvi., 224.

The merits of this compendious sketch of the history of philosophy, which are not small, follow from the circumstances of its origin. After having had his interest in the subject excited from early youth, the author has for twenty years back been regularly in the way of lecturing upon it, first at the Lyceum of Speier, and then at the University of Erlangen. The present work consists of the paragraphs which he makes the basis of his oral exposition, and they are now published as first part of an introductory text-book to philosophy, to be followed by another volume on logic and philosophical encyclopædia. The paragraphs have gradually assumed their present form in the light of experience and reflection, and are supplemented by careful bibliographical references. As the work has been in no way hurried, it is of genuine quality—by no means such as often is offered to students for purposes of "recapitulation". About one-half of the volume is given to the German movement from Kant onwards. References to English philosophy, early or late, though not extensive, are good as far as they go.

Vorfragen der Ethik. Von Dr. Christoph Sigwart. Herrn Dr. Eduard Zeller, Professor an der Universität und geheimem Regierungsrathe in Berlin als Festschrift zur Feier seines fünfzigjärigen Doctorjubiläums am 25 August 1886 überreicht von der philosophischen Facultät der Universität Tübingen. Freiburg i. B.: J. C. B. Mohr (Paul Siebeck), 1886. Pp. 48.

These "general considerations on the problem that a scientific ethics can and must set itself" are well adapted to their purpose of promoting clearness of thought on ethical questions. Prof. Sigwart aims at reinstating the idea of "end" or "highest good" in the supreme position from which it was deposed by Kant. The idea of "universal law," he makes dependent on a highest good that is willed by men in common as members of a society. In the brief space of his essay he has something to say on all the chief points of ethical definition.

Philosophische Aufsätze, II. Zur Würdigung Comte's und des Positivismus. Von Rudolph Eucken (Jena). Pp. 55-82.

This essay on Positivism follows the author's essay on Neo-Scholasticism, noticed in Mind xi. 445. His estimate of Comte, as far as it goes, is in essential agreement with Prof. Caird's (see Mind x. 462), and from a somewhat similar point of view.

Wer schrieb das "Novum Organon" von Francis Bacon? Eine kritische Studie von Eugen Reichel. Stuttgart: A. Bonz, 1886. Pp. 32.

An article included by the author in a volume of studies entitled

Skakespeare-Litteratur here appears in a separate form. Its contention is that the *Novum Organum* is the work of an unknown writer "edited" and interpolated by Bacon; this writer being a free-thinker and opponent of scholasticism, and a seeker of knowledge for the sake of "light" not "fruit," while Bacon himself was a scholastic theologian and a utilitarian in matters of science.

Die Naturwissenschaftlichen Grundlagen der Poesie. Prolegomena einer realistichen Æsthetik. Von WILHELM BÖLSCHE. Leipzig: C. Reissner, 1887. Pp. iv., 93.

"The natural sciences form the basis of our whole modern thinking. We cease daily more to regard the world and men from metaphysical points of view." Science, then, must transform poetry; and for it to do this, the construction of a sound realistic æsthetics is necessary. On pain of elimination in the struggle for existence, poets will have to adapt themselves to "the new results of research". They usually commit the error of trying to get at the results of science by studying philosophical systems; or, if they study science directly, like the "naturalist" school, then, since scientific psychology and physiology are chiefly founded on study of the organism in a state of disease (p. 11), they are disposed to give too much attention to pathological phenomena. It is better to commit this error than the first, because the study of diseased organisms known to be diseased is less dangerous than the glamour of "sentimentality" and "metaphysics" which the older poets and romancers diffused over life. They must be taught, however, to avoid this error also; and in order to put them in a right position for understanding the results of science on the most important questions relating to normal phenomena, the author has written chapters that are to give the outcome of scientific research, entirely unmixed with metaphysics, on "Free-will" (c. ii., pp. 15-36), "Immortality" (c. iii., pp. 37-47), and "Love" (c. iv., pp. 48-67). Two more chapters treat of "The Realistic Ideal" (c. v., pp. 68-74) and "Darwin in Poetry" (c. vi., pp. 75-87). Then the volume is brought to a close with some considerations on the future of realistic art in Germany (c. vii., pp. 88-93). "The premisses of the poetic experiment: that, in a word, is everything." "The realistic poet shall paint life as it is." He must display the naturalistic ideal—"the tendency to health and happiness"—like a teacher drawing the attention of his class to one aspect of an experiment, yet without falsifying it (pp. 73-4). And this ideal had better be represented too weakly "than that one should profane it in the manner of the old metaphysical ideal by artistic re-colouring" (p. 74). From the moment that science has proved that ghosts do not exist, it is no longer permitted to poets, if they do not wish to be ridiculous, to introduce a ghost making any kind of revelation (p. 4); but the realistic poet may find it useful to study experiments on hypnotism (p. 22).

Zur Moral der literarischen Kritik. Eine moralphilosophische Streitschrift. Von WILHELM WUNDT. Leipzig: W. Engelmann, 1887. Pp. 77.

In this *Streitschrift* Prof. Wundt replies at considerable length to a criticism on his *Ethik* by H. Sommer, published in the March number of the *Preussische Jahrbücher*. He contends that he has been misrepresented; protesting especially against its being supposed that in consequence of his "evolutionism" he underrates the ethical value of the individual life. The controversy is made the occasion of some remarks on the morality of literary criticism, and its present condition in Germany.

Ist E. Haeckel Materialist? Von Dr. R. Koeber. Berlin : C. Duncker (C. Heymons), 1887. Pp. 36.

The purpose of this pamphlet is to show, against a polemic of Dr. O. Zacharias, that Haeckel's view of nature is in reality not materialism, but a "vitalistic" monism ; the materialistic utterances in his writings being inconsistent with what can be clearly made out to be his central metaphysical idea, which is in harmony with the "Nature-philosophy" of Schelling and the teleology of Von Hartmann.

Received also :—

A Dictionary of Philosophy in the Words of Philosophers, edited with Introduction by J. R. Thomson, Lond., R. D. Dickinson, pp. xlviii., 479.
L. Carroll, *The Game of Logic*, Lond., Macmillan, pp. 96.
W. Renton, *The Analytic Theory of Logic*, Edinburgh, J. Thin, pp. 16.
W. B. M'Taggart, *Absolute Relativism*, Lond., W. Stewart, pp. viii., 133.
R. Bithell, *Agnostic Problems*, Lond., Williams & Norgate, pp. viii., 152.
W. D. Lightall, *Sketch of a New Utilitarianism*, Montreal, pp. 40.
C. Richet, *Essai de Psychologie générale*, Paris, F. Alcan, pp. xiv., 193.
E. de Roberty, *L'ancienne et la nouvelle Philosophie*, F. Alcan, pp. vi., 364.
G. L. Fonsegrive, *Essai sur le libre Arbitre*, F. Alcan, pp. 592.
E. Ferrière, *La Matière et l'Energie*, F. Alcan, pp. 580.
J. Delboeuf, *La Matière brute et la Matière vivante*, F. Alcan, pp. 184.
A. Martin, *L'Education du Caractère*, Paris, Hachette, pp. 377.
J. B. Meyer, *Probleme zur Lebensweisheit*, 2te Aufl., Berlin, Allg. Verein f. deutsche Literatur, pp. vi., 369.
S. Stricker, *Ueber die wahren Ursachen*, Wien, A. Hölder, pp. 60.
R. v. Schubert-Soldern, *Reproduction, Gefüht u. Wille*, Leipzig, Fues (R. Reisland), pp. xv., 135.
F. J. Mach, *Die Willensfreiheit des Menschen*, Paderborn u. Münster, F. Schöningh, pp. ix., 274.
W. Schmidt, *Die göttliche Vorsehung u. das Selbstleben der Welt*, Berlin, Weigandt u. Grieben, pp. 230.
P. Lanzky, *Abendröte, Psychologische Betrachtungen*, Berlin, C. Duncker (C. Heymons), pp. 134.
A. Wernicke, *Die Grundlage der Euklidischen Geometrie des Maasses*, Braunschweig, J. H. Meyer, pp. 58.
H. Neiglick, *Zur Psychophysik des Lichtsinnes*, Leipzig, W. Engelmann, pp. 84.
J. Bergmann, *Ueber das Schöne*, Berlin, E. S. Mittler, pp. 201.

Notice will follow.

VIII.—NOTES.

THE QUARTERLY REVIEW ON HOBBES.

THE following "Letter to the Editor" appeared in *The Athenæum* of June 4th. It may have some interest for the narrower circle of philosophical readers, even apart from the light it throws upon the current ethics of anonymous writing. The first sentence has reference to some previous letters that had appeared about other articles in the same number of the *Quarterly*.

University College, May 26, 1887.

If your readers have not yet had enough of the April *Quarterly*, there is something for them to hear about still another article in it. Circumstances have till now prevented me from seeing the article 'Hobbes of Malmesbury,' occasion or pretext for which is found in a little volume contributed by me to Blackwood's 'Philosophical Classics for English Readers'. The Reviewer passes an extremely contemptuous judgment on every part of Hobbes's philosophical performance, though he is rather apt, on taking up the different parts in turn, to make light of each by contrast with some other which he forgets that he has already denounced. It is not a well-informed judgment, and there is a want of shading and discrimination in the invective that reminds one of nothing so much as the handiwork of some of the poorer theological assailants of the philosopher in his own time. However, it is not to the Reviewer's judgment, in either matter or manner, that I desire to draw a little attention, but to the astonishing inconsequence of statement and inadvertence to plain fact which he has been suffered to exhibit through thirty pages of an authoritative literary organ.

The Reviewer has neglected no device for the overawing of his readers. Knowing, or having read on purpose, something even of Hobbes's physical lucubrations, he can give you an array of citations in foot-notes to other works than *Leviathan*. He not only can mention those MSS. in the British Museum that are referred to in the volume before him, but can himself quote from another with which Sir Matthew Hale "came to the rescue" against Hobbes—which was a remarkable thing to do with an unpublished MS.; forgetting, however, elsewhere (p. 423, ll. 6-8) to put quotation-marks about the one smart saying in his article, taken almost *verbatim* from the worthy Chief Justice. In particular, he is so much at home with the MSS. at Hardwick Hall as to be able to announce that these documents, through being "frequently exploited," "have been left very much in the condition of a sucked orange"—nay, "to avouch from a personal inspection that, since Aubrey's narrative, not a shred of fact can be extracted from them of the slightest interest to the public". After a magisterial declaration like this, set in the forefront of the article, what is left for the common reader but humbly to accept all that follows upon it?

Now it would be going too far to say that there is a misstatement in every one of the Reviewer's narrative sentences throughout the article, but it is probably under the mark to say that there are two misstatements for every three sentences. That is a serious charge to bring against the *Quarterly*, which has so often stood up (as again, elsewhere, in this very number) for precision of historical statement. I cannot, of course, prove it in detail here, but I make the charge, in its general form, on my personal responsibility, and I proceed, with your leave, to give some specimens of the Reviewer's work taken at random, after first convicting him upon one

point of quite cardinal importance—the fairest that could be put forward with such a master as he is of the Hardwick MSS.

The point upon which any true understanding of the course of Hobbes's philosophical thought turns is the fact that the two small works published separately in 1650 as *Human Nature* and *De Corpore Politico* were composed not later than the spring of 1640, as parts of one single 'little treatise in English,' entitled *Elements of Law, Natural and Politic* —composed, that is, some time before the first-written of his systematic works, the Latin *De Cive*. The point is cardinal, as I have more than once shown, because he is thereby proved to have elaborated his characteristic psychological doctrine and drawn out the main lines of his political theory before he had made any progress with his ambitious scheme of general philosophy based on mechanical principles. We see him to have been a man whose native bent was to the study, above all, of man and society. It is also, as regards the political theory, of first importance to find him committed to most of his extreme positions before the outbreak of the Civil War. Now the fact, though it might have been otherwise inferred (as I afterwards saw), was first made out by me at Hardwick Hall on examination of the MSS. there preserved—MSS. which at the time (1869) showed no trace of having been before attended to by anybody, though they have since been examined over again to excellent effect by Dr. F. Tönnies.[1] See, then, the understanding and the carefulness of the *Quarterly* Reviewer :—

P. 415: "His *De Cive* was published in 1642. A few years later this work, cut into two halves, reappeared under the guise of *Human Nature* and *De Corpore Politico*, or the *Elements of Law, Moral and Politic* —an adaptation of the title applied to his first treatise on the same subject."

The ludicrous blunder of taking the *Human Nature* and *De Corpore Politico* to be halves of the *De Cive* is here not unaccompanied by some sort of notion that something had been written before 1642 under a title of *Elements*. Accordingly, afterwards (p. 418), he speaks of "a small tract intended for private circulation" in 1640, though he would hardly have called it "a small tract" had he either seen its size among the Harleian

[1] The outcome of Dr. Tönnies's labour ought to have been better known by this time. Mr. James Thornton, of High Street, Oxford, who had issued a handsome reprint of *Leviathan* in 1881, agreed with Dr. Tönnies in 1884 to publish a carefully collated edition of the *Elements*, with some *inedita* appended; also a reprint of *Behemoth*, with text corrected according to what appears to be the original MS. of the work in the library of St. John's College, Oxford. The two volumes were announced to appear in the winter of 1884, and were, in point of fact, almost completely printed off early in 1885. After an unexplained delay of eighteen months on the part of the publisher, the remaining few pages (of one of the volumes) were got into print last autumn, and nothing appeared to stand in the way of definitive publication in October. Since then it has been found impossible, by any and every means yet employed, to obtain from Mr. Thornton the least hint of his intentions regarding the volumes, or any kind of accommodation by which the results of the foreign scholar's laborious research may be allowed to see the light." [Some statement to this effect was due to the readers of MIND, because, as far back as October, 1884, the reprints which Mr. Thornton had then announced for immediate publication (the first of them in November), were described at some length in these pages (ix. 618), from information supplied by Mr. Thornton himself.]

MSS., which he is here particular to mention in a foot-note, or given the least heed to the much more interesting and valuable copy—prefaced and dated in Hobbes's own hand—among the Hardwick MSS., on occasion of the "personal inspection". The statement, too, is immediately followed by another remarkable assertion—that the *Elements* of 1640 was "expanded" into the *De Cive*, when the *De Cive* contains nothing in any way corresponding to the *Human Nature* part of the earlier treatise. The Reviewer is evidently all at sea over the business, and he goes finally to the bottom thus :—

P. 419: "In 1651 Hobbes translated the *De Cive* into English. The year previous, while in Paris, he divided the treatise into two portions, which he published under the titles of *Human Nature*," &c., as before.

The old blunder about "division"—inconsistent with the other about "expansion"—is here repeated with superb aggravation. Are we not told —if words have meaning—that Hobbes translated the (Latin) *De Cive* into English one year after he had published, in English, its two halves? It would be difficult to surpass this.

There is, otherwise, a false implication (or more than one) in what the Reviewer here says of the English translation of the *De Cive* which did appear in 1651; but enough should have been said to prove that it is not this article in the *Quarterly* that should ever be consulted for the facts of Hobbes's life. Is the Reviewer, then, more trustworthy when he speaks of other people?—

P. 418 again: "In 1648, during a short stay of Descartes in Paris, Hobbes, at the Duke of Newcastle's, met that philosopher whose *Du Monde* and *Method* had already startled Europe".

Here go two errors to one sentence. "Duke" should, of course, be "Marquis," as he is, in fact, rightly styled some pages later; not "Duke" till after the Restoration. The other error is more serious—and significant. The Reviewer, who appears to know nothing of the greater works that Descartes had time, after the *Method* (1637), to publish some years earlier than 1648, knows, however, of a *Du Monde* that "had startled Europe" before that date. Nobody else knows anything of the kind. To be sure, in the volume under review it is stated at p. 40 that Descartes had written an exposition of his physical doctrine under that name as far back as 1633, which he then 'kept back' on hearing of Galileo's fate. The piece did not see the light till it was published by Clerselier in 1664, long after Descartes' death. It was a slip of mine to call it *Du Monde;* its proper title was *Le Monde.*

There are still more errors on the same page; but let us now try another some way on. On p. 429 (middle of the article) we read as follows :— "The freedom of the will is an abstract question. Hirsutius Pansa and Cicero in the pleasant woods of Puteoli, as Critias and Socrates on the banks of the Ilissus, discussed it with calm equanimity."

"Hirsutius Pansa" is a curious designation for Cicero's neighbour Hirtius of the *De Fato* even though the poor man did soon after meet his death with his fellow-consul Pansa. And is it some other such jumble in the Reviewer's mind—say of the *Critias*, *Timæus* and *Phædrus*—that has resulted for him in the vision of that other talk by the Ilissus?

Much else might be remarked on p. 429, but pass we rather to p. 441 (last but three of the article), and so end as we began with Hobbes. Here, in a few sentences, it rains errors. Take these two at a venture : "But Wallis reserved his wrath till the Restoration, when he impeached Hobbes's loyalty, which opened the mathematical feud again. Hobbes attacked Wallis under the name of Henry Stubbe and other assumed patronymics."

Now (1) Wallis had no wrath then to reserve; (2) it was not he that then (or earlier) first impeached Hobbes's loyalty, but Hobbes that began by insinuations against his; (3) Hobbes, and not he, reopened the mathematical feud; (4) it was reopened on quite other grounds than any question of loyalty upon either side; (5) Hobbes never attacked Wallis under the name of H. Stubbe, or other assumed patronymics; (6) H. Stubbe's actual intervention (does the Reviewer not know who Stubbe was?) in the Hobbes-Wallis controversy happened three years before the Restoration. These in themselves are no great matters; but if the Reviewer was to mention them, what need for such stress of invention? The real facts, compendiously stated for his convenience in the little book before him, might have served his turn.

Your readers have now had a surfeit of errors; but I would fain, before closing, take this opportunity of correcting one that stands in the book. On p. 213, n., C. Blount's broadside, *The Last Sayings*, &c., is described as issued 'with hostile intent' on Hobbes's death. I could explain, but can in no way excuse the 'hostile'. At most Blount was joking.

G. Croom Robertson.

So far the letter, which (after three weeks) remains without answer—as was perhaps to be expected. Here it might not be out of place to add some not less wonderful specimens of the Reviewer's philosophical manner; but, though this could be done to any length, it is not worth while. I will only remark that men like Grote, Mill and Austin might at this time of day have been spared such poor detraction as this anonymous writer has been allowed by the Editor of the *Quarterly* to attempt in their regard.

Occasion may, however, be taken to add, from another source, some matters of philosophical interest. In a detailed criticism of the little volume on Hobbes, which Dr. F. Tönnies has recently written in the *Philosophische Monatshefte* (xxiii. 5, pp. 287-306), out of the fulness of his knowledge, there is much to be learnt concerning the philosopher, if also something to be queried. I do not read the passage in the *Vitae Auctarium*, which he refers to at p. 290, as carrying back the composition of the 'little treatise' to 1637, nor am as much inclined as he is to rely upon that authority if it did; but on the subject of Hobbes's relation to Bacon, so commonly misunderstood, he has been the first to draw attention (pp. 293-5, n.) to some passages of great interest in Thomas Sprat's *Observations on M. de Sorbière's Voyage to England writtten to Dr. Wren* (1665). Says Sprat (from p. 228):—"He [Sorbière] commends him [Hobbes] indeed for that upon which Mr. Hobbes lays not so much stress, for his good breeding; but he wounds him in the most dangerous place, his philosophy and his understanding. He very kindly reports of him that he is too dogmatical in his opinions, &c. . . . But, however, to comfort Mr. Hobbes for this affront, I dare assure him that, as for M. de Sorbière's part, he understands not his philosophy. Of this I will give an unanswerable testimony, and that is the resemblance that he makes of him to the Lord Verulam, between whom there is no more likeness than there was between St. George and the Waggoner. He says that Mr. Hobbes was once his amanuensis, that from thence he has retained very much of him. . . . This, sir, is his opinion: but how far from being true, let any man judge that has but tasted of their writings. I scarce know two men in the world that have more different colours of speech than these two great wits. The Lord Bacon short, allusive and abounding with metaphors. Mr. Hobbes round, close, sparing of similitudes, but ever extraordinary decent in them. The one's way of reasoning proceeds on particulars and pleasant images, only suggesting new ways of experimenting, without any pretence to the mathematics. The

other's bold, resolved, settled upon general conclusions, and in them, if we will believe his friend, dogmatical." The distinctive characteristics of the two thinkers are here, as Dr. Tönnies remarks, excellently given—in terms that might have come from Hobbes himself. I am less sure that Dr. Tönnies is right when he goes on, in the same note, to express his conviction that the words of Hobbes in the "Ep. ded." to the *De Corpore*—when, after lauding Copernicus, Galileo and Harvey, he says: "Ante hos nihil certi in physica erat praeter experimenta unicuique sua et historias naturales, si tamen et hae dicendae certae sint, quae civilibus historiis certiores non sunt"—directly point to Bacon's *Sylva Sylvarum, or a Natural History in Ten Centuries* [of Experiments], published according to him, in first Latin edition, in 1648, not long before the *De Corpore*. Leaving aside a question as to this date, and going back to the first publication in 1627, we are still left with the difficulty of understanding how Bacon's *Natural History* can be described as prior ("ante hos") to the work done by Galileo, to say nothing of Copernicus. It seems more natural to suppose that the reference is back to the ancients.

EDITOR.

THE METHOD OF MEASURING PROBABILITY AND UTILITY.

"Previous to the time of Pascal, who would have thought of measuring *doubt* and *belief?*" writes Jevons, contending that the measurement of utility may one day cease to be paradoxical. The analogy indicated by Jevons I have attempted to trace in a recently-published little study (mentioned above, p. 466) on the Art of Measurement, which it is the object of the following lines to describe.

One feature of resemblance between the compared sciences is that in both some of the data are apt to be very rough, more removed from the possibility of numerical precision than is usual in the Mathematical Sciences. In Probabilities, when we seek to ascend from an observed event to its cause, in the way described by Mill after Laplace (*Logic*, bk. iii., ch. 18, §§ 5, 6), there frequently occurs a constant representing "*a priori* probability," concerning which, as Mill says, we "cannot form any plausible conjecture, much less appreciate it numerically". The regular constructions of mathematical reasoning repose upon the loose foundations of common-sense. There is a similar mixture of materials in Economical Science. Abstract reasoning must cohere with practical wisdom.

In Probabilities it is often necessary to assume that quantities between which no inequality has obtruded itself in the course of experience may be treated as equal. Thus, in the Theory of Observations—the most triumphant application of the Calculus—it is virtually postulated that one value of the object under measurement is *a priori* as probable as another. In Utilitarian Theories, Equality is similarly postulated. The reasoning of Bentham and Prof. Sidgwick, that equality of distribution tends to maximum happiness, presupposes that the distributees are equally capable of happiness.

The Mathematical Theory of Observations is comparable with the principle of Authority in Social Science. The physicist, when there are given to him different estimates of a quantity, does not usually reject any, nor yet does he entirely accept any. He forms a Weighted Mean between the data, a combination of the evidence in which more importance is assigned to those sources of information which, in past experience, have proved more accurate. The social philosopher should proceed similarly with regard to that large portion of his subject-matter which is not amenable to Inductive Method—where we have only indistinct and fallible

perceptions of equilibrium between diverse probabilities and utilities, evidence more analogous to the physicist's 'observations' than to his reasoning.

The quantities to which the Theory of Observations is applied in Physics are times, distances, and the like. The quantities which are the objects of the analogous method in Social Science are partly indeed objective: as when we compare the opinions of authorities on Currency as to the amount of wealth likely to result from the adoption of Bimetallism. But the Utilitarian is concerned with ends as well as means. In considering, for instance, the policy of Trades-unions, he must not only estimate their effect upon wages or production, but also weigh the opinion which, according to Prof. Sidgwick, is wide-spread "among observant persons, that human beings generally have a tendency to overvalue leisure as a source of happiness". The indeterminateness which blurs our estimate of hedonic quantities may be reduced to a minimum by the combination of judgments with due regard to their weight. Prof. Sidgwick doubts "whether a mere increase of numbers of human beings, living as an average unskilled labourer lives in England, can be regarded as involving material increase in the quantum of human happiness". So the physicist may doubt whether a transit observed by him occurred at a particular time, or at an epoch earlier, say, by a tenth of a second. The error, so considerable while we rely upon a single judgment, is reduced by the combination of observations.

Thus the higher branch of Probabilities projects into the field of Social Science. Conversely, the principle of Utility is at the root of even the more objective portions of the Theory of Observations. The founders of the science, Gauss and Laplace, distinctly teach that, in measuring a physical quantity, the quæsitum is not so much that value which is *most probably* right, as that which may *most advantageously* be assigned—taking into account the frequency and the seriousness of the error incurred (in the long run of metretic operations) by the proposed method of reduction.

The writer has attempted, in the work referred to, to state these principles with more qualification and with greater clearness than the brevity of the present communication admits. He has aimed at portraying the philosophic aspect of the Calculus of Probabilities in a manner intelligible to the generally-educated man. The reflections, which cannot be apprehended without a technical knowledge of the Method of Least Squares, have been relegated to an Appendix.

F. Y. Edgeworth.

In the *Vierteljahrsschrift für wissenschaftliche Philosophie* xi. 2 (April, 1887), Dr. F. Koerber criticises Prof. Bain's views as to the mechanical correlates of mental reproductions. He agrees with Prof. Bain that the correlates of original and reproduced mental processes are, intensity apart, identical, but contends that they must be sought entirely in the brain; mental reproductions being in no way correlated with the diffusion of a current of nervous energy upon the peripheral organs. He examines in detail Prof. Bain's arguments in *The Senses and the Intellect* (3rd ed., p. 377), concluding in every case that the facts brought in support of the hypothesis of a correlation of consciousness with the whole nervous process, instead of simply with the process in the brain, admit of some other explanation. He also brings some objections against the admissibility of the hypothesis in itself. For example, he remarks that if ideas of sounds are accompanied by a return current on the organ of hearing, then, since there is a tendency to vocal and other rhythmical accompaniments of remembered tunes, the hypothesis requires that the original process of *hearing* a tune should be correlated with vocal and respiratory as well as

auditory feelings. Here he omits to note that this is the view actually taken by Prof. Bain, and that it is supported by the observations of Stricker, who, on the basis of introspection as well as of physiology, contends for exactly this active element in the perception of musical sounds.

The Aristotelian Society for the Systematic Study of Philosophy (22 Albemarle Street, W.).—The papers read since our last record have been the following:—March 7, "Lotze's Metaphysic," by Mr. A. M. Ogilvie; March 21, "Dualism in Augustin and Descartes," by Mrs. Brooksbank; April 4, "Fact and Right," by Mr. P. Daphne, LL.B.; April 18, "The Relation of Language to Thought," by Mr. F. C. Conybeare; May 2, "Hegel's *Rechtsphilosophie*," by Mr. S. Alexander, V.P.; and May 16, "The Ultimate Questions of Philosophy," by Prof. Bain. In every instance the reading of the paper was followed by a discussion. It is intended to print an *Abstract of the Society's Proceedings* during the present Session, shortly after the close of it.

Prof. Thomas Spencer Baynes of St. Andrews died very suddenly on May 30, at a friend's house in London. His health has been very uncertain for many years past, but he had struggled so manfully with the charge he undertook in 1873 of carrying through the 9th Edition of the *Encyclopædia Britannica*, that it was hoped he might, with the vigorous aid he has had of late years from a conjoint editor, have seen the end, now approaching, of that stupendous labour. Born at Wellington, Somersetshire, on March 24th, 1823, the son of a Baptist minister, he was at first destined for the pulpit, but, leaving the Baptist Bristol College and passing to Edinburgh University, he came to be chosen, from 1851, as Sir W. Hamilton's assistant in reading lectures, till the year before the disabled philosopher's death in 1856. It was while thus associated with Hamilton that he produced, in 1852, his *New Analytic of Logical Forms*, after having issued his translation of the *Port Royal Logic* in the previous year. He was also an active writer in the field of general literature (contributing especially to the *Edinburgh Guardian*). On leaving Edinburgh, he worked for seven years as assistant editor of the *Daily News*, but maintained his philosophical status, as Examiner in the University of London, and could thus in 1864 take up the function of Professor of Logic, Rhetoric and Metaphysics at St. Andrews, in succession to Spalding. Though his work from that time continued to be in great part literary, his concern for philosophy was shown by the prominence given to the subject, in all its departments, throughout the new edition of the *Encyc. Brit.* He had a character of remarkable charm, and dies regretted by an unusually wide circle of attached friends.

Brain, with Part xxxvii. (April), has become the organ of the Neurological Society of London, founded last year, and is now edited by Dr. A. de Watteville exclusively. The Part is almost wholly occupied with a long paper (pp. 89) by Dr. Bastian on "The Muscular Sense," followed by a "Discussion" (pp. 89-137). Both paper and discussion are touched upon at p. 431 above, and will be returned to later on.

Announcement has been made, since February, of the proposed issue at an early date of a quarterly journal to be entitled the *American Journal of Psychology*, under the editorship of Prof. Stanley Hall of the Johns Hopkins University of Baltimore. It will contain: (1) Original contributions of a scientific character; (2) Papers from other journals; (3) Digests and Reviews. While articles of unusual importance in the fields of logic, the history of philosophy, practical ethics and education, will be welcomed, the main object of the journal will be to record the progress of scientific psychology, and special prominence will be given to methods of research. It will be

published quarterly, and with as much regularity as the supply of material warrants. Each number will contain from 60 to 100 pages.

There is also announced, to appear at Berlin (G. Reimer), from next October, a quarterly *Archiv für Geschichte der Philosophie.* It will be edited by Dr. L. Stein, of Zürich, in association with Profs. H. Diels, W. Dilthey and E. Zeller of Berlin, and B. Erdmann of Breslau; and is meant to bring to a focus the multitude of contributions to the history of philosophy now scattered through a variety of journals philosophical and other. The first half of the new journal (extending to about 10 sheets) will consist of new communications, confined to statements of fact in briefest possible form, and written in either Latin, Italian, French or English, as alternative to German. In the second half, yearly critical reports will be given of all new publications of any kind bearing on the history of philosophy, the Editors taking each a fixed period for German productions, while Italian, French and English are left respectively to native scholars. In English, Mr. Ingram Bywater of Oxford undertakes to report on ancient, and Prof. Schurman of Cornell University, N.Y., on mediæval and modern philosophy. Co-operation has been promised by a large number of scholars in different countries.

The Journal of Speculative Philosophy.—Vol. xx., No. 3. The Divine Pymander of Hermes Trismegistus (Reprinted from Everard's Translation, 1650). W. L. Sheldon—Agnostic Realism. K. Fischer—On Kant (trans.). Hegel—Philosophy of Religion (trans.). Goeschel—On Immortality (trans.). Notes and Discussions.

Revue Philosophique.—An. xii., No. 4. A. Penjon—Une forme nouvelle du criticisme. G. Fonsegrive—Les conséquences sociales du libre arbitre. F. Picavet—Le phénoménisme et le probabilisme dans l'école platonicienne (i.). Rev. Gén. (L. Marillier—La suggestion mentale et les actions mentales à distance). Analyses et Comptes-rendus (Travers Smith, *Man's Knowledge of Man and of God;* J. Morley, *On Compromise*, &c.). Rev. des Périod. Soc. de Psychologie physiologique (E. Gley et L. Marillier—Expériences sur le sens musculaire). Correspondance (Beaunis—Sur la spontanéité dans le somnambulisme. E. Blum—La pédagogie et l'hypnotisme). No. 5. Pierre Janet—L'anesthésie systematisée et la dissociation des phénomènes psychologiques. A. Binet—L'intensité des images mentales. F. Picavet—Le phénoménisme, &c. (fin). Variétés—L'enseignament du droit naturel au Collège de France. Analyses, &c. Rev. des Périod. Correspondance (J. Delboeuf—Réponse à M. Beaunis). Soc. de Psych. phys. (J. Héricourt—Sur un caractère différentiel des écritures). No. 6. Darlu—La liberté et le déterminisme selon M. Fouillée. B. Perez—L'âme de l'embryon et l'âme de l'enfant. F. Paulhan—L'amour du mal. Rev. Gén. (M. Vernes—Histoire et philosophie religieuses). Analyses, &c. (F. E. Abbott, *Scientific Theism*; W. P. Begg, *The Development of Taste*, &c.). Soc. de Psych. phys. (A. de Candolle—Lettres sur un projet de questionnaire d'hérédité psychologique. Ch. Richet—Expérience sur le cerveau des oiseaux).

La Critique Philosophique (Nouv. Sér.).—An. iii., No. 3. . . . C. Renouvier—L'évolutionisme chrétien (fin). L. Dauriac—De l'éducation naturelle selon H. Spencer. C. Renouvier—Sur l'activité de la matière. V. Egger—Une lettre de Bonald à Degérando; une lettre d'Ampère au même . . . Notices bibliog. No. 4. C. Renouvier—Les Dialogues de David Hume sur la religion naturelle (i.). J. Chancel—Des crimes impossibles envisagés au point de vue de la contingence et du déterminisme. R. Allier—La pédagogie sociale. L. Ménard—Leconte de Lisle. No. 5. C. Renouvier—Les Dialogues, &c. (ii.). F. Pillon—Quelques mots sur l'agnosticisme.

T. Whittaker—Un compte rendu du dernier ouvrage de M. Renouvier. F. Pillon—A propos de la classification des sciences d'Auguste Comte. Notices bibliog.

Rivista Italiana di Filosofia.—Vol. ii., Disp. 3. L. Ferri—Il monismo nella filosofia contemporanea. A. Valdarnini—Nota sulla legge suprema dell' educazione secondo Rosmini e Rayneri. R. Pasquinelli—La dottrina di Socrate in relazione alla morale ed alla politica. N. Fornelli—Il fondamento morale della pedagogia secondo Herbart e la sua scuola. Bibliografie.

Rivista di Filosofia Scientifica.—Vol. vi., No. 1. E. Morselli—La filosofia monistica in Italia. G. Checchia—Del metodo storico-evolutivo nella critica letteraria. Riv. Bibliog., &c. No. 2. R. Schiattarello—La formazione dell' Universo (i.). S. Corleo—Le differenze tra la filosofia dell' identità e l'odierno positivismo. Note Critiche (G. Rosa—Il Padre Eterno. R. Bobba—La jettatura secondo Democrito). Riv. Anal. Riv. Bib. (H. Maudsley, *Natural Causes*, &c. ; E. B. Bax, *Handbook to the History of Philosophy.*). No. 3. G. Dandolo—Il "concetto nella logica positiva". R. Schiattarello—La formazione, &c. (ii.). Note Critiche (E. Tanzi—Sulla percezione degli accordi musicali). Riv. Anal. Riv. Bib. Riv. dei Period. No. 4. G. Cantoni—Il sistema filosofico di Carlo Cattaneo. G. Cesca—Le cause finali. Riv. Sint. (G. Mazzarelli—Di alcune forme di transizione nella serie animale). Riv. Bib. (H. Sidgwick, *Outlines of the History of Ethics* ; W. Knight, *Hume*, &c.). Riv. dei Period. No. 5. F. Pietropaolo—Scritti inediti di Pasquale Galluppi. P. Vecchia—L'equilibrio psico-sociologico come legge di educazione. G. Bonelli—La morale e il diritto come elementi integranti dell' organismo sociale. Riv. Bib. (D. Ferrier, *The Functions of the Brain*, &c.).

Zeitschrift für Philosophie, &c.—Since last record of this journal in Mind No. 45, Hefte 1 and 2 of Bd. xc. should have appeared, but neither has come to hand.

Philosophische Monatshefte.—Bd. xxiii., Heft 5, 6. P. Natorp—Ueber objective u. subjective Begründung der Erkenntniss (i.). Recensionen (G. C. Robertson, *Hobbes;* F. H. Bradley, *The Principles of Logic;* H. Spencer, *Principles of Psychology*). Litteraturbericht. Bibliog., &c. Heft 7, 8. A. Richter—Grundlegung einer Geschichte der deutschen Philosophie. Recensionen. Litteraturbericht. Bibliog., &c.

Zeitschrift für Völkerpsychologie u. Sprachwissenschaft.—Bd. xvii., Heft 2. H. Steinthal—Mythos, Märchen, Legende, Erzählung, Fabel. E. Veckenstedt—Die Farbezeichnung im *Chanson de Roland* u. in der *Nibelunge Not*. O. Kares—Die Formenverhältnisse des Wortschatzes u. die sprachlichen Baustile. R. Brandstetter—Malayische Studien. W. Lutoslawski—Ueber das phonetische Element in der Poesie. Beurteilungen.

Vierteljahrsschrift für wiss. Philosophie.—Bd. xi., Heft 2. F. Koerber—Bain's Ansichten über die mechanischen Correlate der Erinnerungen. E. Kröner—Gemeingefühl u. sinnliches Gefühl. J. Petzoldt—Zu R. Avenarius' Prinzip des kleinsten Kraftmasses u. zum Begriff der Philosophie. Anzeigen. Selbstanzeigen, &c.

Philosophische Studien.—Bd. iv., Heft 2. G. Th. Fechner—Ueber die psychischen Massprincipien u. das Weber'sche Gesetz. A. Lehmann—Ueber Photometrie mittelst rotirender Scheiben. J. Mc.K. Cattell—Psychometrische Untersuchungen (iii.). J. Merkel—Das psychophysische Grundgesetz in Bezug auf Schallstärken (Schluss). W. Wundt—Seltbsbeobachtung u. innere Wahrnehmung.

No. 48.] [October, 1887.

MIND

A QUARTERLY REVIEW

OF

PSYCHOLOGY AND PHILOSOPHY.

I.—THE PHYSICAL CONDITIONS OF CONSCIOUSNESS.

By Henry Maudsley, M.D.

It is certain that by no exercise of consciousness of which we are capable can we explain what it is in itself: consciousness must be a fundamental fact in all its functions—inexplicable, ultimate. The aim of sober inquiry is, therefore, to search and, if possible, find out the conditions of consciousness—the conditions, that is to say, under which it arises, varies, sinks and lapses. And, inasmuch as those who base psychology entirely upon its revelations cannot but acknowledge that it is not essential to mental being at every moment or at any moment coextensive with the whole of it, but that mental powers exist habitually and even act occasionally in the absence of consciousness, they also may view with approval every effort to discover and set forth the physiological conditions of its occurrence.

At the outset it is evident that those conditions, if they ever are discovered, will be discovered only by observation of suitable instances and by legitimate inductions from them. No intuition of self-consciousness can possibly help in the matter; the self-revelation of any instant of its being is a revelation of the instant only, does not contain a revela-

tion of the antecedent or underlying conditions of that illuminated instant. Furthermore, it is not necessary that the instances observed and noted be complex and extraordinary; as good instruction may be obtained from simple and common instances, fitly selected, as from the most complicated and rare, provided that they be observed accurately and carefully weighed. The good use of uncommon facts is to awaken a curiosity and attention which common facts fail to awaken.

I.

Consciousness implies discrimination: *that* is the manifest condition of its origin. Now, discrimination means not a separate impression alone on the brain, but the feeling that it is separate or different from something else; wherefore, consciousness is not a simple but a duplex event. Were the impression entirely separate, without relation to the foregoing or accompanying impression, there would not be consciousness; without some bond of connexion between the two states they would be as distinct and unrelated as impressions made upon different minds. He who could not discriminate two colours, or two feelings, or two thoughts, but, by supposition, lived exclusively in one feeling, or in one thought, would not be conscious of sensation, feeling or thought. The bond of a bodily unity between the different impressions there necessarily is always, but conscious unity is something more: there is the physical connexion of an underlying bodily unity; there is also a certain active state of that connexion and unity, which is the condition of consciousness.

The common way of speaking of consciousness seems calculated to mislead, if not to produce misconception of its true nature and functions; for it is spoken of as if it had existence apart from each particular fact or act of consciousness—as if, indeed, it were a sort of illuminated mental atmosphere into which states of mind arose and so became known. Such terms as the 'threshold' and the 'horizon' of consciousness tend perhaps to keep up misconception. There is no such domain of supereminent being; a general or abstract consciousness is not an existence at all, it is no more than a general name or notion. What is a fact is the particular conscious state at the particular instant. There are so many consciousnesses as there are sensations, emotions, thoughts: a redness-consciousness, a greenness-consciousness, a sourness-consciousness; a tree-consciousness, a sea-consciousness, a star-consciousness; an anger-consciousness, an envy-consciousness, a joy-consciousness; and

there is no consciousness apart from the particular act or state of consciousness. Indeed, it may be questioned whether it is right to speak of ' states of consciousness ' ; it would be more correct to speak of states of mind, or of functions of mental organisation, which may be conscious or not.

Again, consciousness is not, as commonly implied, of constant quality or quantity, but is actually—as follows necessarily also from what has just been said—an extremely inconstant and variable state ; varying in degree from the greatest intensity down to zero, and in quantity from a large expanse down to a vanishing point. Being incident to the particular mental state, and to the particular tract of nervous substratum subserving that state, it is qualified and localised thereby. Anyone who will attend closely and patiently enough to his own consciousness, when thinking, may discover, perhaps, that he never does think with his whole brain, and suspect even that he thinks with different strands of it when thinking of greatly different interests and situations. If it be not right to speak of consciousness as having extension and being divisible into parts, that is for the same reason that it is not right to speak of one sense in the terms of another—to speak of a loud smell, a red taste, a shrill touch, a bitter sound.

The *cogito ergo sum* of Descartes, if translated fully by exposition of its implications, would run thus : I (who am) think, therefore I (who think) am. The axiom implies tacitly, whether designedly or not, that consciousness is not the fundamental fact of being, although, no doubt, my consciousness is the fundamental fact of my conscious being. Everybody who wishes to be understood seriously takes it for granted that he exists, even when he is not conscious, in a scheme of things which exists when he is not conscious of it. There is the conscious *I*, and there is the unconscious *I*. Now the conscious *I*, when I reflect, certainly does not include the whole *I ;* the *I* who reflect is not ever inclusive of the whole contents of my personality : it is the *I* of the moment—that is, of the then mode of my Ego ; which may be very different from the Ego of twenty-four hours before or afterwards, and is certainly different, never exactly the same, on every occasion of my thinking. If the subject of which I think interest me not deeply, the reflection on it is a reflection on it by a part of me ; if it interest me more deeply, the reflection on it engages more of my mental being ; if the situation be congenial and grateful, the reflection on it is by one part of my mental being predominantly ; if it be disagreeable and uncongenial, it is by another part of my

mental being predominantly: the reflection, in fact, may be ever so partial and incomplete, it may be fairly full and complete. Meanwhile, the unconscious *I* has not undergone any change, or at any rate anything like a corresponding change; it lies deep, basic, silent for the most part beneath all conscious manifestations; they are like multitudinous waves on its surface, some of which reach deeper down than others, but none of which reach its lowest depths. Inevitably then does the axiom of Descartes assume the fundamental fact of unconscious beneath conscious being—the *I* who am as the basis of the *I* who think; and necessarily must those who would know and explain mental being pursue their inquiries in regions of which self-consciousness gives no information.[1] Whatever its value in its own province, the method of introspection is manifestly inadequate to sound the depths of mental function; it is struck with fatal barrenness at the root.

The *I* who think never being the whole *I* who am, the so-called unity and continuity of consciousness are not the certainties which they are commonly proclaimed to be; at the best they are derivative, not fundamental. Is there, in truth, a real unity of consciousness at all? Is not the real unity the unity of the individual organism, which is fundamental and the basis of such unity as appears in consciousness? Consciousness is actually a multiplicity, a series of immeasurably rapid discontinuities, rather than a continuity and unity; there is no conscious thread of unity between its multitudinous rapid successions. The conscious Ego of to-day is as different as possible from the conscious Ego of twenty years since, and could not, as a matter of pure introspective or intuitive self-consciousness, know itself to be the same. There is no sufficing direct intuition of identity, that is to say; the knowledge thereof is indirect, discursive, through memory of scenes and events, retrospective, a historical continuity. It is because I remember the scenes and events, and how the individual who is now *I* acted in them, that I know that I was that individual; not because I have immediate consciousness of the sameness of self. I am so much changed since then that, except for my historical consciousness, I could not know myself to be the same, could

[1] There is a certain instinct or feeling or quasi-consciousness of the body, arising from the unity of working of its organs and declaring itself in the brain, which lies deeper than, and goes before, the conscious 'I think, therefore I am'. Messages are sent continually to the nervous centres from every part of the complex network of nerves distributed to its different parts; and it is in these impressions that the basis of the *Ego* lies.

not believe that I ever felt, thought and acted as I did; and if my past self were to meet me face to face and to greet me as myself, I should not recognise and own it. Life is a succession of scenes in which the curtain falls on a dead self and its interests to rise on a new self and its interests. Time is the consoler and reconciler, because we change with time and are no longer the same: it is not I who am who was bereaved or offended, it was the *I* that I was.

II.

The habitual recurrence of impressions of the same kind and of respondent acts ends notably in an unconsciousness of them and the acts. They and their motor machinery become automatic in action; a fitly organised adaptation of action to impression is perfected; and the subject is unaware of them and their motor outcomes unless he deliberately think of them. The double mechanism of reception and reaction, perfected for its purpose, acts simply and directly as one, without needing or causing any coincident activity. When a man twirls the end of his moustache he does an act which he has consciously learnt to do, and of which he is conscious as he does it; but he may do the same kind of act unawares—even when, struck with apoplexy, he is entirely unconscious of what he is doing. The same tracts of the brain are in the same action; but in the former case there must be some difference in the act to account for the consciousness. What is the difference? Not a greater intensity of the particular activity, whereby what was below consciousness rises into it, since there is no evidence of that either in the increase of the stimulus or in the character of the act, nor any probability that such an increase of intensity, if it took place, could ever excite consciousness during the deep apoplectic coma. Is not the difference this —that there is the addition of a concurrent or rapidly alternating activity of another tract of brain which the apoplectic damage has paralysed; that the action, when conscious, is not simple, separate, complete in itself; that it involves an induction of activity in related parts, a certain sympathy or synergy of them? If there be such a reflection of the particular energy on to other related tracts, it will naturally come to pass that the character of consciousness will vary according to the number of them implicated, being large and calm consciousness when they are many, intense and narrow consciousness when one only is implicated.

The fundamental fact in man's relation to the world

outside him, as it is in the relation of every living thing, is reception of impression and reaction thereto, and thereafter suitable adaptation of reaction to impression in the progressive development of structure and function. Variation of impression solicits necessarily a corresponding variation of reaction. In order that such further adaptation may take place in mental development, separate nerve-tracts must come into play, interact fitly with the old ones in new permutations and combinations, and so organise in the end nervous plexuses into definite patterns; which patterns are then the organised faculties of different functions. While this is taking place—while the process of adaptation is going on—there is consciousness: when the process is complete, the adaptation perfected, consciousness lapses. Synergy, then sympathy, afterwards synthesis—such is the ascending order of events in mental evolution, whether of the individual or of the kind.[1] The elements of mental being act together, feel together, then think together—are purely reflex, then reach sensory consciousness, and lastly become intellectually conscious. Now, inasmuch as they are capable of acting together before consciousness dawns and after it has set, it is plainly not an essential part of the mechanism of the event; it has the character rather of an accompaniment of the event—a something which appears naturally at a stage of the process of the mental organisation which is taking place, a necessary concomitant of the consolidation of the coincident or rapidly alternating activities.

The process of learning a skilful movement by patient practice so well that it becomes instinctive and even unconscious, is manifestly then a process of consciousness lapsing into unconsciousness. We are conscious of the process while it is a becoming, unconscious of it when it has become; conscious of the *forming*, unconscious of the *formed*, neurotic pattern. To ascertain exactly the conditions of the learning and the conditions of the learnt must be to ascertain the conditions of consciousness and of unconsciousness. The conditions of learning are, as we have seen, efforts of adaptation during which permutations and combinations take place until the fit adaptation is made, the proper neurotic pattern, that is, organised, when non-essential interactions

[1] The complex muscles of the stomach, the intestinal tract and other internal viscera notably act together habitually and purposively without consciousness; it is only when their action is deranged that we become dimly and painfully conscious of them. It is probably the same with the low organic creatures that possess the simplest forms of nervous structure. In both cases we attend, as it were, upon the dawn of consciousness.

cease. Consciousness goes along with the coaction of parts in a process of combination or integration; in other words, it attends the reflection of the energy of one nerve-tract or nerve-grouping on to another nerve-tract or nerve-grouping in the making of a new one. In the accomplishment of this process we learn to *consense* the things, to feel them in their connexion or relation, to know them together (*con scio*), to be *conscious;* and after its accomplishment we come to know them so well that our knowledge is latent or unconscious, implicit, unless we reflect and make it explicit—that is to say, unless we repeat the process with deliberate attention.

What is the addition then when I reflect, when I am the conscious *plus* the unconscious *I*? It is not an addition to the *I*, it is an addition only of a change in the *I:* it is the awakening of an unconscious part of it to consciousness, the implication of other activities by reflection; and it is the reflection which conditions the consciousness—is objectively that which subjectively is consciousness. Thus it appears that the psychological term *reflection* is founded literally on a certain positive physical basis. According to the number of the thought-junctions is the richness of the reflection—that is, the number of incidences or coincidences of related activity; and the richness of the reflection determines the quantity and quality of the consciousness, which may be concentrated and exact, or ever so vague and diffuse.

If the foregoing considerations be sound, they justify the conclusion that the condition of consciousness is a certain concurrence of activities, or alternation of activities so rapid as to seem concurrent. The conclusion may be entertained in regard of intellectual consciousness; but how can it be true of the simplest consciousness—of a simple feeling or sensation? Here it is necessary to bear in mind that sensations and feelings that appear simple are really complex, actually compounds of more rudimentary elements; sensations seemingly most simple being notably capable of resolution into combinations of simpler sensations by those who are endowed with the fitly acute sensibilities and have cultivated them by practice. It is hardly possible to say of any sensation that it does not contain *extension.* However, we may assume for our purposes the existence of a primary and simple sensation; we are then driven perforce to the conclusion that the primary element of a sensation is, paradoxical as the statement sounds, insensible—insensible, that is to say properly, to me in whom it is; which is not equivalent to saying that it has not a *special susceptibility* or *quasi-sensibility* of its own. At any rate, however simple

the sensation be, the conditions of its being are not simple: it is an event the molecular conditions of the occurrence of which are exceedingly complex, more complex than the constitution and motions of the solar system. For what does the structure of the nervous unit of the simple sensation mean? It means, if I may so speak, nothing less than a most complex and concentrated organic abstract of the general life-relations of all creatures that lived on earth before the level of sensation was reached in the ascending scale of animal existence: a sort of condensed or involuted equivalent of the neurotic pattern or plexus which is organised in the supreme nerve-centres to subserve a particular function but which, instead of being concentrated into a molecule, is there spread over a considerable area. It is impossible, therefore, to stimulate a nervous unit without stirring a multitude of inconceivably minute activities, the quintessential abstract of manifold vital relations with the external world.

It is a fair question, however, whether the least pain or sensation would be felt by the individual if we could imagine a nerve-unit in him to be hurt perfectly separately; for it might be cogently argued that the condition of pain is the sympathy or synergy of like units to which it is organic neighbour; just, in fact, as the decomposition of a chemical compound is due to sympathy or synergy of similar molecules, and could not take place at all were the disturbance limited to one molecule only—were it not capable of propagating a similar disturbance in neighbouring molecules by the easy infection of similar motions in elements of the same kind. Now if the constitution of the nervous unit have the nature and meaning which I have supposed it to have, it is obvious that when it undergoes stimulation the relations embodied in it as organised or capitalised experience—its involuted memories, so to speak—are unfolded, as it were, and used. And if the affection of it be of a disorganising or destructive character, as we have reason to think it is when pain is felt, the sensation of pain or suffering is the conscious equivalent of the suffering and shrinking from an unwelcome stimulus which is manifested by the low forms of animal life that possess not any nervous tissue. For it is certain that all forms of living matter exhibit an attraction for that which maintains and fosters their life, and a repulsion to that which lessens and destroys it; and certain also, one might add, that the nervous system is developed from the same outer layer of the embryo from which the cuticular covering of the body is developed—the so-called epiblast or ectoderm.

Passing from these speculative reflections, what we have to realise here is that pain-consciousness is a consciousness *sui generis*, entirely different from any of the different forms of sensational consciousness, and that although we apply the general term *consciousness* to all of them, there is no common abstract consciousness; that in talking of them we are talking of entirely different things. Our true business is not to search out the conditions of consciousness, but the conditions of each particular consciousness—the conditions, that is, of pain and, in due course, of every other special feeling or so-called affection of consciousness. Could we explain exactly under what conditions pain-consciousness occurs, the explanation would not be an explanation of the conditions under which tactile consciousness or visual consciousness occurs; for they are not, like it, of a destructive or disorganising, but rather of a conservative and organising character.

It is necessary also to apprehend clearly in this connexion that there is acquired functional organisation of nervous plexuses as well as fixed inborn structural organisation of them—that is to say, organisation of existing structures to act together to subserve particular functions; and that it is such organisation we mean when we speak of the organisation of a particular neurotic pattern in the supreme centres of the brain. There are multitudinous *nervous plexuses* constituting the complex structure of the brain, and they are capable of forming manifold *neurotic patterns* in mental organisation. These patterns may be ever so temporary and transient, or they may become fixed and lasting when they are habitually repeated. The theory is that consciousness attends the functional organisation of a particular neurotic pattern; that it lapses when such a functional plexus has been definitely formed by habit; and that it is necessarily aroused again when that pattern is broken up or disorganised by the irruption into it of other activities. This last operation, corresponding probably to the disorganisation of the nervous unit of sensation which is the condition of pain, is notably difficult and disagreeable in proportion to the strength of the habit and may be positively painful.

Relativity is implied necessarily in every fact of consciousness—is the very essence of it. Whether we speak of self and not-self, of inner and outer, of up and down, and the like, we take this relativity for granted, implicitly or explicitly. Nobody could ever be conscious that he was an Ego had he not a correlative consciousness of a Non-ego. Now the external world, as individual experience, means

motor reaction; it is in reacting to the impressions of it which his senses are adapted to receive that the person frames the forms and substances of an external world—frames the world as he experiences and conceives it. When all these motor reactions, both direct and representative, are entirely shut off, when neither they nor the intuitions of them in the supreme centres take place, then consciousness of an external world ceases necessarily. By monotonous continuance of one sort of sensory impression, as, for example, by gazing or listening continuously, a person may notably bring himself into such a state of complete motor quiescence that consciousness becomes vague, confused, and even ceases. Let any one who is in a state of bodily comfort lie perfectly still in bed, in a thoroughly unconstrained and easy position, not exerting the least muscular tension, he will not be conscious of the attitude of his limbs and body, not even whether one limb is touching another or not; he is not only unconscious of attitude, but unconscious of any sensory impression. Every sensory impression implying suitable motor adaptation, it would be impossible without such fit muscular reaction to see an object, to hear a sound, to smell an odour, to feel a touch; the motor element is an essential part of the perception. The dissociation of the sensory pole of a nerve tract from its motor pole and from every other motor pole would be the abolition of its sensation. It is probable that an infant could never feel if it could not move.

Reverie is not thought, but the absence of thought. The rustic who, musing vacantly, seems deep in thought, is not really thinking; he is pretty nigh unconscious, and therefore goes on musing for any length of time without weariness. His motor quiescence ends in a dim, dreamy, hazy consciousness which is next door to unconsciousness, and easily passes into it. The reading of an uninteresting book occasions drowsiness, and the reading of any book soon sends to sleep one who is unused to reading or who is exhausted by great muscular exertion. His attention fails, we say; in other words, he cannot keep up the nice motor adjustments so as to apprehend or grasp definitely the words and realise their meanings. The various means of trying to go to sleep have the same aim and exemplify the same principle: their aim is, first, to limit the area of cerebral activity so that most of it may cease; second, to make the still continuing activity as monotonous as possible, until motor apprehensions of the recurring images fail. So also is it with fatigue and exposure to extreme cold: the be-

numbed and torpid nerve-centres declare their incompetence by an utter incapacity of further exertion and an ensuing irresistible inclination of the person to lie down, which, if yielded to, is followed by instant and usually fatal sleep. The inability to move a step further and the supervention of unconsciousness go along together.

On entering a room we seem to see the various prominent objects in it at one glance. That is not really so; we see them in a quick succession of glances, being unconscious of the rapid movements of the eye by which each object is successively apprehended. If the eye be fixed steadily and exclusively on one point—a difficult thing to do, but which may be done by practice—"the whole scene becomes more and more obscure and finally vanishes".[1] The objects first appear dim, and then, if the almost incontrollable impulse of the eye to wander be successfully resisted, they fade away. These phenomena Sir C. Bell believed to be consequent upon the retina being subject to exhaustion. Is that the true, or at any rate the entire, cause? Is it simply that the retina is exhausted, or is it that consciousness wanes and ceases in proportion as an impression is cut off from all its associations, sensory and motor? The exceedingly rapid play of the very fine movements of the eyes by which we are conscious of the different objects in the room, as if we took them all in at a single glance, may help us to conceive the probably still more rapid interplays between nerve-tracts in the brain which are the apparent conditions of consciousness: movements of such coruscating rapidity that they might be compared perhaps to the infinitely varied and rapid play of sunlight on the sea-waves which constitutes their 'multitudinous laughter'.

Impressions are always being made upon us by our environment, many of which we are habitually unaware of, but we live and exert a certain muscular tonicity or tension, even when we do not move, in relation to them; if we ceased entirely to react in that way we should become absolutely unconscious, and we should never become unconscious in the degree of sleep (which is not ever absolute insensibility) did we not cease to react to a great many of them. How continuous and how essential to our full personality these impressions are, even when we are habitually unconscious of them, we never realise adequately until we find that we have lost them. A sudden deafness in one ear causes great uncertainty of position and movement, and

[1] Sir Charles Bell, *The Hand*.

perhaps actual vertigo; the suddenly-produced numbness of a part of the body, even if it be of a finger only, occasions a singular embarrassment and sense of incompleteness of self for a time, accompanied by a difficulty in realising one's personality and its relations, because it cuts off a part of our habitual, although unconscious, hold on the environment; a strong agitating emotion completely incapacitates any one from apprehending external objects, making him walk about among persons and things as if in a dream, because its internal commotion renders impossible his habitual motor adjustments. In all such cases there is functional disintegration of the framed neurotic patterns of habitual perceptions and acts. When its habitual relations with the not-self are maimed, the self is lamed and incomplete.

III.

Without doubt the same tract of the brain is in action in the performance of a particular perception and in the memory of it; and therefore there is the same kind of consciousness when there is consciousness. To revive that consciousness in any instance it is necessary to repeat more or less strongly the original function—we cannot remember a perception without including the motor element which enters into its original composition. In regard of sight and hearing it is notably much easier to reproduce the reflex act of perception, and so to conceive in memory what we have experienced, than it is in regard of a smell or a taste; the motor adjustments that accompany these latter experiences are not cultivated in man (it is different in some animals) definitely and persistently, and do not therefore enter into his intellectual structure as those of sight and sound do, either because they are not needed or because they lie nearer the organic life and are incapable of such cultivation. Whatever the cause, the result is that they are not available for conception: we cannot remember a smell or a taste in the realising way in which we remember what we have seen; we can remember that we had such an experience, but we are obliged to make use of other sense-activities, especially that of sight, when we attempt to conceive a smell or a taste—that is, to reproduce its consciousness; and even then we do not obtain a vivid and definite success. From smell and taste alone, uncultivated as they are in us, we should hardly know that there was an external world.

When a person talks rationally to us for a minute we go away and can recall to mind what he said; the trains of

his thought followed the established order of our trains of thought, and are therefore easily reproduced by us: the corresponding neurotic plexuses have discharged the same function, the formed patterns of them being the same. Listen, however, for a minute to the entirely incoherent talk of a voluble lunatic, it is utterly impossible immediately afterwards to bring to mind what he said. Why? Because it is utterly impossible to reproduce or repeat in our brains, with their definitely organised neurotic patterns, the rapid succession of disordered ideas in their disorderly succession which went on in his brain—impossible, that is, to re-collect them: trains of association will not enable us to do that, because the reproduction of the incoherence is the disintegration of such organised trains, and therefore incompatible with their helpful action. His mad whirl of words produced its proper consciousness at the time, but we can no more reproduce that consciousness than we can commonly remember a complicated dream a few hours after it is past, or than we can remember exactly a pain. Most persons think they can remember a pain because they can remember the historical fact that they had it; but to remember it really, to revive the pain as it was felt, it would be necessary to reproduce in greater or less degree the disorganisation which was the condition of it—in fact, to have it again.

It is a common experience that when we have intended to do some act, it may be a trivial one, and have forgotten what it was, we feel an obscure mental disquiet or discomfort, a sort of uneasy sense of want, which is eased immediately we remember what the intended act was. In such case there must be a subdued mental activity below the level of consciousness, a sub-conscious or infra-conscious tremor, which occasions the feeling of vague discomfort; for it would seem impossible that there could be any such feeling were there not motion of some sort. Motion there is probably, but not of such degree of activity as to awaken consciousness, to make an induction of activity in related parts. How then to do in order to remember? How to raise the infra-conscious to the conscious? How, in fact, to induce the required synergy or coaction of parts? Now it is a well-known mental law of association that those states which have occurred once together or followed immediately are prone to occur together again or to follow one another immediately. In accordance with this principle we find the most helpful way to recall the forgotten intention is to go back to the act we were doing—perhaps an essentially unrelated one—when the intention came into our

mind, the act that was coexistent with it, or immediately antecedent or sequent to it. Repeating the act or imagining its repetition, instantly perhaps the forgotten intention flashes into consciousness. It is not that the subdued tremor is simply raised to the pitch of conscious vibration, but that it is brought into relation with the contiguous activity, whereby it becomes conscious and has its own activity increased: exciting the contiguous activity, we bring the sub-conscious tremor of the lost intention into relation with it and get a rapid interplay of reflections: we remove the block, so to speak, and make the junction of tracks.

In this process of reminiscence it is not consciousness which is the active agent going to work to search and find out the lost incident, as though it were a sort of illumination that was thrown into one after another of the dark mental recesses or chambers of memory until what was lost is found. There is no such possibility as a direction of consciousness to a particular receptacle of brain or mind, since the consciousness does not rise until the lost incident is found; it is coincident with or instantaneously sequent to its excitation—does not occasion but is the recollection. It is nonsense to speak of consciously desiring or requiring what has been forgotten, since we are unconscious what that is which we desire or require, consciousness occurring only at the instant when it is no longer forgotten. The work is done really by the appropriate mechanism of the mental organisation, and is physiologically mechanical. Observation agrees with theory to prove this. When any one has learned a piece of poetry thoroughly, so that he can at any time repeat it with the greatest ease once he has got the proper start, the repetition is automatic; he can then repeat it internally or aloud without thinking of the words; and if he forgets a word or a line of it, the successful way to recall the lost word or line is not to think what it is, not to deliberately exercise consciousness in the endeavour to discover it, but to repeat the words or lines that go before it, while thinking of something else, or at any rate while not thinking of it. The process is notably quite different from one of striving to remember a piece of poetry that has not been thoroughly fixed in memory, when we must think and try to stir all kinds of related activities; being rapid, instantaneous and spontaneous, whereas this is slow, labouring and voluntary. In the complete or unconscious memory there is plainly a sort of registration or perfected nervous mechanism of parts answering to the order of the words and capable of being put into action without regard to the

meaning of them. In order to be conscious of their meaning, if that is our aim, it is necessary to proceed more slowly with the repetition and to bring each word into distinct consciousness by realising the relations or associations of the idea which it denotes—that is to say, by stirring related activities which, then *known together* with it, make *consciousness*. Now it is obvious that the intervention of a process of this sort must interfere with and hinder the mechanical succession of the word-repetition; for it is to stir other activities where they are not needed and where they are therefore obtrusive and obstructive. Additional proof of this is seen in the fact that a few lines of a language not understood, if engraven well in the memory in childhood, can be repeated, once they are brought back to mind, at any period of life, and with as much ease and accuracy as the words of a known language which had been similarly committed to memory; also in the extraordinary revival and utterance of forgotten lines of poetry sometimes displayed in mania and other abnormal brain-states.

The foregoing considerations go to prove that in the continuity and energy which exist throughout nature consciousness has no part; that it is not an energy itself, but only an accompaniment of the actual energy. The whole business of mental function, as work, might go on without it just as the machinery of a clock might work without a pointer to indicate the hours. It is a necessary concomitant apparently of the process of manufacture of the mental organisation, not an energy at work in the manufacture. The misfortune is that ordinary language assumes it to be a kind of supreme energy, and so habitually vitiates thought about it. When any one accidentally touches a red-hot poker with his hand and instantly withdraws the burnt part, certainly before he has time to think and will the quick movement of withdrawal, we have been accustomed to say that the painful feeling causes him to do it—that the act is sensori-motor. Inasmuch as the pain is a consciousness, or what we improperly call an affection of consciousness, that is equivalent to saying that consciousness determines motion, is itself an energy; which is what we have decided it is not. The movement is really the work of physical structuralisation in response to a specially disorganising affection of it — a physical reaction of a special structure to a physical impression made upon it; the original aptitudes to certain combinations and successions of movements having been organised into definite nervous machinery by education and practice. A baby might not do it, although it would feel

the pain, might even press its hand against the poker, because of the absence of the requisite education-developed organic machinery; or a person dead-drunk, because of the loss of the power of fit reaction which goes along with the loss of sensibility.[1] The fit self-protective movement is made because the impression is injurious to the organism, inimical to its life, the pain being a sort of outcry of danger and the accompaniment of a capacity and impulse to select and put into instant action a purposive function of escape that has become automatic. But the very same movement might, if rightly stimulated, be executed without consciousness; for if the physiological experimenter were able to select out exactly and put into isolated action (which in such a fine and complex nervous structure it is impossible for him to do mechanically) the proper nerve-tracts subserving the irritating stimulus and the responsive movement, he would produce the same effect in a person unconscious of any pain. The pain therefore has no part in the actual circuit of work done, is not cause or energy, is only a necessary accompaniment of it.

Let us now suppose a person to do the same act voluntarily—to touch a poker not hot and instantly to withdraw his hand as if it were red-hot. There can be no doubt that just as exactly as he succeeds in imitating the act just so exactly does he put into action the same nervous machinery. But what is the addition to the affair? Not the addition of any abstract consciousness and will, for the pain of the first affair was a consciousness, but the addition of another and higher kind of consciousness and energy. And what else is that addition but the addition of the concurrent activities of other nervous tracts and their interaction or communication with the nervous tract subserving the so-called sensory reflex movement. Were this movement to fail of its instant self-protective effect (which it might well do if it did not take instant effect before the disorganising action signalled by the pain had gone too far) the supplementary function of these other tracts would in

[1] A person drunk, but not quite dead-drunk, might do it automatically when he could not do it voluntarily, because his lower nerve-tracts might remain capable of function when the supreme tracts were paralysed by the alcoholic poison. We observe a remarkable illustration of the same kind sometimes in the case of a person under the influence of chloroform who, undergoing a surgical operation, writhes and yells as if he were suffering the most horrible pain, but does not remember, after the operation, anything about it, declaring that he felt not the least pain. His higher nerve-tracts were paralysed by the chloroform, but its effect had not gone so deeply as to paralyse the lower tracts.

any case be brought into use. If a person does not escape from a horrible pain instantly by means of the fit sensory reflex movements, these purposive movements are disorganised and practically paralysed, and he immediately begins to make the most energetic voluntary movements of escape. Should they fail, all his movements become disorganised *quoad* purposiveness—in fact, disorderly, convulsive, and eventually paralysed; not otherwise than as a great panic of fright paralyses them instantly in some persons.

Thus much then concerning the probable conditions of consciousness. The conclusion is that consciousness is not part of any actual energy in nature, but the accompaniment of certain coincident or rapidly alternating energies of matter in a complex state of nervous organisation, disappearing when these energies are organised into such perfect consolidate coaction as to act as one, reappearing again when the co-organised plexuses or formed neurotic patterns are disintegrated. The natural order of ascending mental development from simple and concrete, through general, to still more general ideas, and from these upwards to the most abstract ideas, is the progressive co-organisation of two systems to act as one, and the further co-organisation of these integrated systems in ever ascending scale, until the ideal unity of a supreme head or will is reached in which all have abstract representation in the one and the one acts through all. Were this thorough, complete, perfect, there would be no consciousness; consciousness attends upon its incompletenesses and its disintegrations.

IV.

The various and many times strange states of abnormal consciousness which accompany certain induced and morbid states of the nervous system go to show how baseless the metaphysical theory of consciousness is. It is only because such instances, recorded long ago over and over again, have been persistently ignored by those who have been the professed cultivators of so-called mental philosophy, being overlooked entirely by them or rejected as morbid facts which did not properly come within its scope, that their imposing fabrics of philosophy have been able to endure for a day.[1] As a matter of observation, consciousness is evidently capable of all sorts of disintegrations, mutilations, divisions;

[1] They have been described and discussed by Combe, Mayo, Wigan, and by writers on mental disorders, as instances of *twofold personality*, of *double consciousness*, &c.

distractions so numerous and various in kind and degree as to prove that the conscious Ego has not real identity and unity, and that there would be no guarantee of personal identity were the affair an identity of consciousness alone. In the alternating and opposite phases of one variety of mental disorder, the so-called *folie circulaire* of French authors, the person is as unlike in thought, feeling and conduct as two persons of different character; there is no continuity of consciousness between the one state and the other, but a complete break and transformation of it. Of the so-called mesmeric or hypnotic patient under the dominating influence of the operator it is impossible to say whether he is conscious or not: he is not absolutely unconscious, since he hears and does what the operator tells him, but he has certainly lost possession of himself and of the external world, and has consciousness only of the self which is possessed and governed and of the things in relation to which his executive machinery is set by the operator. So bound locally is his consciousness to the nerve-tracts which the operator selects and puts in action that it is possible sometimes to perform a severe surgical operation upon him without his feeling pain. His unity as a complete conscious individual is decomposed and destroyed.

There are notoriously insane persons whose mental derangement appears to be very partial, perhaps limited to one class of relations only; while their conversation and behaviour are perfectly rational in respect of most subjects, so that no one would suspect the least derangement, no sooner are the particular relations in respect of which they are deranged brought into play than they discover their unsoundness of mind. The eternal surprise then is that one can be so insane who appears generally to be so sane. But what just cause of surprise is there? It is obvious that the morbid tract is inactive during the rational phase of the person's existence, its function dormant, and that the moment it is stirred into activity the discordant note is heard and the music of mind marred. The event is no more wonderful than the discord of a musical instrument, one string of which is damaged: if a tune could be played upon it which made no demand upon that string, there would be no discord, and no one would suspect the derangement; but when it is necessary to strike the damaged note, instantly the discord is made manifest. In this instance the affected individual is himself unaware of his distracted identity, although it is patent enough to lookers-on; but there are notably cases of commencing mental derangement in which the sufferer

exhausts the capacities of language in his futile endeavours to express his unutterable sense of a distracted or lost self, and to make the distressing distraction which he feels conceivable to others. They, however, not being able to conceive it in the least, only receive his words as vague expressions of suffering, which they probably think incontinent and exaggerated, and may even pronounce 'hypochondriacal,' and pass them by without the patient and discriminating notice which they ought to obtain. The direct and patent evidence that consciousness is divided, the unity of the individual Ego confused and lost, they are unable to apprehend, because their consciousness is whole, and they are thoroughly prepossessed with the psychological assumption that consciousness is one and indivisible, not subject to conditions of time and space, and the like.

It were strange, were any inconsistency in human thought strange, how persistently we talk of the continuity of consciousness when the truth is that a conscious state is not continuous, but transient. There are so many *trains* or *successions* of thought, as we say justly, but there is not the least evidence of an abstract consciousness abiding between these successions; no more evidence, in fact, than there is of an abstract express train keeping up a continuity between a number of express trains rapidly following one another on the same line. Moreover, the rapidity with which a train of thought passes through the mind is notably very different in different persons, and in the same person at different times—different, for example, in youth and in old age, in health and in sickness, in lively and in sluggish temperaments. In that inflamed state of thought and feeling which often precedes an attack of acute mania and gives the transient show of an extraordinary mental brilliance, the trains of thought follow one another with great rapidity at express speed; in the brain-decay of old age they follow one another slowly and creep along sluggishly, the person being notably slow in apprehending, slow in thinking, slow in uttering his thought. In each case the measure of the rapidity is the measure of the duration of consciousness; which may, after all, be a measurable function, whenever, if ever, we attain to delicate enough means of making the very nice measurements required.

How much rather empty rhetorical eloquence has been uttered at different times concerning the rapidity of consciousness! We are challenged to admire the amazing speed with which it traverses the most distant regions of space, passing in the twinkling of an eye from Kamschatka

to Peru, from the fireside to the remotest star. As a matter of fact, if thought ever did make such a journey, it would take a longer time than light would to make the same journey. But it does nothing of the kind: it merely travels from one nerve-track in the brain to another lying perhaps so near it that a microscope is needed to show that they are different tracks; and the speed, appreciable even for so microscopic a distance, differs in different persons according to each one's personal equation. The world with which alone consciousness has to do, is the world as it has been organised and registered in the brain by experience, and the journeys which it makes are no more than the microcosmic representatives of macrocosmic distances.

Consider briefly the striking phenomena of loss of memory in what is called senile imbecility—that is to say, in the extreme mental decay which sometimes takes place gradually in old age or befalls more suddenly after an attack of apoplexy. A person so afflicted says the same thing or tells the same story of his past life as many times in as many minutes, while forgetting instantly all recent events and utterly oblivious, on each occasion of retelling his story, of having told it before. The same nerve-tracts are in function on each occasion, but there is no *conscious* registration of its immediately previous function. It is impossible to say there is not memory seeing that the tale is remembered and told in the same words, but there is no memory of the former retellings. The more early and stably organised neurotic plexuses remain still capable of function, while the later organised plexuses answering to the events of later and present life have been rendered incapable of function by the failing nutrition and decay of brain; the result being that there is no possibility of connecting the function of the former with any function of the latter, and therefore no memory of its repetition. The power of knowing them together,—that is, *consciousness*—failing, there is no possibility of reproducing it as memory.

The religious fanatic of India who voluntarily subjects himself to occasions of protracted physical suffering, or inflicts frightful injuries on himself, seems to be so transported by enthusiasm as to be insusceptible, or nearly so, to the torture which he might be expected to feel. Consciousness clearly has not full freedom of function, or else it would attend to the impressions of torture: it is under physical restraint, being fast bound to the strand or tract of exalted nervous function. There is a veritable *psycholepsy* or *neurolepsy*—the condition and effect of the psycholeptic strain being the induction of such a molecular state as to render conduction

impossible. Therefore the non-implicated nervous tracts or areas are pretty nigh or completely incapable of consciousness, although not necessarily equally incapable of all function. Now, to be absorbed exclusively in one sensation or thought is to be unconscious. But in this case the exclusiveness is probably not quite complete. The consciousness, so far as it exists, is perhaps somewhat like that which persons have who rush frantically to the doors in a panic when a theatre takes fire, and undergo or inflict injuries in their wild fright, without knowing or feeling what they do.[1] When they come into possession of themselves after the danger is past, they have a dim sort of consciousness of one or two things that happened around them, but they are quite unable to give anything like an exact or complete account; they remember no more perhaps than that they found themselves at a certain place, without remembering in the least how they got there.

These instances, and many like instances which might be adduced, go to show that particular tracts of the mental organisation may be put into an ultra-physiological, if not pathological, action during which they are isolated functionally from the rest of that organisation, and that all kinds and degrees of strange, partial, confused and distracted states of consciousness answer to the different degrees and extent of such extraordinary activity. Always the localised activity involves a localised consciousness. While the *complete* isolation of a particular tract, its exclusive activity, would be the abolition of consciousness, its almost complete isolation would be the condition of that sort of ecstasy into which saints of different religions have been in the habit of falling, and in which it is impossible sometimes to say whether they are conscious or not. It is the abstraction of this negation of everything definite which they call the Infinite, and imagine themselves then in ecstatic intercourse with.

When a particular mental tract is engaged in an extraordinary activity which is yet not so extreme as to make a complete break of conduction with other tracts, its tendency notably is to attract concordant vibrations in them and to

[1] The production of a hallucination by the intense activity of a vividly conceived idea illustrates the same principle of action. When the idea reaches such intensity as to be perceived as external object, the person is unconscious of the idea, oftentimes cannot be persuaded that he has had it. He has not so cultivated psychological introspection as to be able to catch the idea in the instant before it is transformed into objective hallucination: a thing which may sometimes be done.

repel vibrations that are not concordant. An intense and uneasy sensation or emotion so engrosses the mind as to make it impossible to carry on a continuous train of thought or a definitely organised succession of nice purposive movements; it attracts involuntarily the reinforcements of congenial or consonant thoughts and repels, being insusceptible to, thoughts that are not consonant; thus it reinforces and intensifies its special consciousness, and, failing utterly to come into relations of consciousness with uncongenial thoughts, makes reflection partial and prejudiced—destroys judgment. Many positive insanities of thought and feeling begin in, and are the permanent outcomes of, such temporary disorders of reflection; they are their pathological developments.

The fundamental note of mental insanity, as of all errors of thought and feeling, is the want or loss of a just equilibrium between the individual and his surroundings; the disorder marking a failure of adaptation in himself which is oftentimes a congenital fault that he owes to his forefathers. Strong passion is brief madness because the internal commotion of it, usurping consciousness, prevents full and free reflection and adaptation, and, putting the individual out of just *ratio* with persons and things, makes him *irrational*. Just as he loses his head in a panic and cannot make the proper motor reactions, so he loses his hold on the outer world when he is agitated and stupefied by some great temporary emotion, or possessed constitutionally by an exaggerated self-consciousness. In the latter case he is said to be very sensitive, and the quality is perhaps regarded as a fine merit of his nature; but whether merit or misfortune, it is really a case of deficient power of adaptation, and therefore fundamentally a defect of his nature—a defect natural to him, occasional to a strong nature brought low by sickness. His mental structuralisations represent a consolidate past, built up from generation to generation, through which there has run a fault of defective adaptation. His right aim, if he would or could mend his nature, should be to learn to resolutely adapt himself to circumstances or to adapt circumstances to himself, and so to attain to a just equilibrium in which self-consciousness might abate or well-nigh expire. As he who is in a state of perfect bodily health is for the most part unconscious that he has a body, and only becomes conscious of it when something goes wrong with its functions, so the ideal of a perfect state of mental health of the individual is that in which the person is unconscious for the most part that he is a self, and the ideal of the fullest

and most complete mental development of mankind, its perfect consummation and bliss, is that in which even consciousness lapses.

V.

The traditional opinion entertained of the leading part played by consciousness in mental function has been an insuperable bar to true observation and appreciation of that which the nervous system can and does accomplish of itself without any help of consciousness. Viewing matters from the central standpoint of consciousness it has been impossible to see what, and hard to conceive that anything, takes place outside its light; wherefore it has been thought actually to do the work which it only makes known the doing of: reason is not deemed to be reason at all, although the work of reason be done, unless it is illuminated: what is done without consciousness is denied anything in common with that which is done with consciousness, although the effect, so far as appears, be actually the same. Now what is the fundamental quality of reason? It is essentially the just feeling of a fact or object and the fit reaction to it—the right apprehension or grasping of it; which means in further result the classification of such apprehensions or cognitions where several are possible and the consequent foresight of effect from cause, of means to end, of purposive action. There is not a single living creature which, whether it knows it or not, does not, in so far as it lives and moves and keeps up its being, evince the fundamental quality of reason. Its nervous system, if it possess one, is the mechanism constructed to minister to that function, embodying implicitly in structure that which it displays explicitly in action. As nervous organisations multiply and vary in form with the multiplication and varieties of animals, each form embodies the special sensibilities and motor reactions which subserve the life-interests of the creature possessing it; it is the incorporation of certain limited tracks of implicit reason, which cannot, because of the absence of other nervous tracks, be attended with any reflective consciousness—are necessary, self-sufficing. Instinct means organised experience and is virtually unilluminated reason, unconscious intelligence; while reason is instinct in the making, adaptation in course of accomplishment, a process of *informing* or *information*. Reason might in fact be defined as desire or impulse seeking the *means* of its accomplishment; instinct as the accomplishment of desire or impulse by *means* that are preformed. An instinctive creature is a creature *in-*

formed for its particular functions and without superfluous nervous structure to undergo further formation—a formed, not a forming structure. The skill of the spider and the skill of the juggler have both been acquired in the course of the ages—both represent capitalised experience; but the skill of the spider involves and uses its entire nervous system, which is framed and set to certain ends, the accomplishment of them being its life of relation, while the skill of the juggler involves only a few tracts of a very complex nervous system, the accomplishment of their function being but a small and incidental event of his life of relation. The one therefore is capable of reflection, the other not; the one capable of progress in feats of dexterity, the other not.

Reflect on the multitude of varied and admirable instincts displayed by the different living creatures, small and great, in the world, and especially on the remarkably elaborate instincts of the different tribes of insects; and thereupon conceive them all brought together in one animal by collection and concentration of their different nervous systems within the compass of a single brain;—would not that composite brain collectively embody a larger and more varied mass of essential reason than a human brain? the unconscious intelligence of it surpass the conscious intelligence? Men have learnt much from animals in the past, but that which they have learnt may be little compared with that which they are destined to learn when they obtain better understanding of the natures and operations of these varied and ingenious embodiments of implicit reason.

Certain it is that we find distributed among animals all those qualities which, when we meet with them collectively in man, we attribute to mind—memory, attention, apprehension; foresight of ends, ingenuity in means and perseverance in the use of them; courage, anger, distress, envy, revenge, love of kind and parental attachment reaching even to the sacrifice of life; there is not a single mental quality which man possesses, even to his moral feeling, that we do not find the germ or more or less full display of in one or other class of animals. Nor is there the least reason to suppose that they depend on different causes in him and in them; what is a sufficient cause in them is a sufficient cause in him; what nervous structure can do of itself in the one it can do in the other: if animals are, as Descartes thought, machines, it is certain the corresponding machinery in man may do most of his mental work. The admiring surprise which is eternally being expressed anew at the ingenuities of instinct and on the occasions of manifestation of conscious

intelligence in the higher animals, as if the former were not "the fruits of a science of very ancient date,"[1] and no animal except man had any right to display the latter, springs really from the difficulty of stripping the facts of their traditional and disguising vesture of words and of seeing them as they are in their essential nature.

The collective brain in which the varieties of animal nervous organisation are supposed to be gathered and concentrated would, of course, be a very different brain from a human brain; although collected, they would be independent. Moreover, each system has for the most part been specialised to the utmost along the particular lines of its development, and, as it were, stereotyped; wherefore, if it were not separate, it would still be incapable of entering into communion of function for a common end with other systems. In the human brain, on the other hand, the different parts are inter-connected structurally and functionally so as to form one organic whole, and they have the character of plastic forming rather than of rigid formed parts; wherefore, they come into relations of function and develop together in progressive adaptation to surroundings, so working out in the end a fixed mental organisation. The latter, therefore, supplies the physical conditions of consciousness which the former does not. When the human brain has, by a long routine of functions in similar circumstances, grown to certain set forms of feeling, thinking and action, its work is pretty nearly as automatic as the instinct of the animal; indeed, most persons become eventually little better than more or less complex automata.

If we could make the ant and the bee into one animal, by combining their nervous systems and the parts they subserve into one organisation, in which each system should be in intimate functional relation with the other, so that the ant felt and responded to the circumstances of the bee's life, and the bee felt and responded to the circumstances of the ant's

[1] Charles George Leroy, born 1723, the Ranger of Versailles and Marly, and author of the admirable letters written as *Naturalist of Nuremberg*. "It has been proved," he writes, "by incontestable facts that a large portion of the inclinations resulting solely from education, when they have been converted into habits and cultivated for two or three generations successively, become almost hereditary . . . the descendants displaying them from birth." . . . "It is possible, then, that the actions which we see performed by these animals independently of the teachings of experience are the fruits of a science of very ancient date, and that in former times a thousand trials attended with more or less success have finally led to the attainment of the degree of perfection which we see manifested in some of their works of the present day."

life; and if we could imagine this compound nervous system to be taken at an early and plastic stage, so as to be capable of unity of education to the full extent of the capacities of ant-life and bee-life; is it not a possible, if not probable, conception that consciousness would occur during its development? The question might, indeed, be fairly raised, whether a consciousness of some sort did not attend the *forming* of these creatures, which, now that they are fixedly *formed*, has disappeared; that which was once diffused through the animal kingdom, when developing, being now concentrated and specialised in the complex brain of man, who has by his predominance superseded other lines of development and condemned them to a sterile immobility. It is a vain speculation certainly; but none the less it is the imagination of a course of events like that which actually takes place now in the human kind when a great genius appears and, gathering up in himself the scattered and sometimes latent lines of human thought and feeling, perceives their relations, combines them into unity of growth, and brings to conscious delivery the silent pulses of the age.

NOTE.—Since this paper was placed in the Editor's hands I have, by his favour, seen Prof. Herzen's exposition of his theory of the conditions of consciousness as set forth in *Les Conditions physiques de la Conscience* (1886, noticed in MIND No. 45, p. 145). Although he therein criticises vigorously the doctrines with respect to consciousness which I have advocated all my life, his main purpose is to set forth and elucidate what he believes to be the physical law of consciousness. Starting from the accepted opinion that there are two phases of every nervous act—first, a decomposition of nervous elements and liberation of energy; secondly, an immediately following reintegration or reconstitution of their substance and storing up of energy—he maintains that *consciousness never accompanies the integration, but is confined exclusively to the disintegration, of the nerve-substance.* That seems to be to say, in other words, that consciousness accompanies *the function*, but does not accompany the subsequent *nutritive repair* of waste which is no part of the function, although no doubt the condition of future function. One is tempted to ask, in relation to this proposition, whether any one has ever said or thought differently. Meanwhile, no account is taken by Prof. Herzen of the question whether it is the nerve-element itself that undergoes disintegration during function, or whether it is only the material supplied to it from the blood that is consumed in the liberation of energy.

His second proposition is that *the intensity of consciousness is in direct ratio to the intensity of the functional disintegration;* and his third, that *the intensity of consciousness is in inverse ratio to the facility and rapidity with which each nervous element transmits its disintegration to other nervous elements and enters upon the process of reintegration.*

These three propositions together constitute what he calls *the physical law of consciousness.* Considering the meaning of the two last propositions, I fail to see why Prof. Herzen should find so much fault as he does with what was no doubt a somewhat crude suggestion of mine made many years

ago with regard to the conditions of consciousness—namely, that in order to have a consciousness of an idea it is necessary, not only that the idea should have a certain intensity, but that its energy should not be discharged entirely and instantly upon the organs of movement. What does the intensity of the idea in such case mean, but the intensity of the disintegration, which is Prof. Herzen's own alleged condition of the intensity of consciousness? And as regards the third proposition, may not diversion of energy be one, if not a main, condition of a slow and difficult transmission through the nervous centres? Be that as it may, however, he differs clearly in maintaining positively, as he does, that the conscious and the unconscious coexist everywhere and always, whatever the nervous centre in action, at one time the one predominating and at another time the other. Thus he attributes even to the spinal cord an *elementary, impersonal, unintelligent consciousness* which is at its maximum in the lower animals, at its minimum in the higher animals. Here, however, it is not quite easy to follow his arguments, since his language does not seem to be always consistent; while he declares plainly that consciousness exists always and everywhere ("le conscient et l'inconscient *coexistent toujours et partout*"), he acknowledges that no appeal is made to the spinal consciousness ("il n'est point fait appel à la conscience spinale") in those acts that are performed automatically by the spinal cord. The conscious is there, but it is not appealed to: in other words, although the conscious always coexists with the unconscious, it exists sometimes in the form of the unconscious! But if it is there and makes no sign, how can we know that it is there at all? Are we not entitled to conclude in such case that 'de non apparentibus et de non existentibus eadem est ratio'?

It is impossible, however, in a note to do justice to the facts and arguments by which Prof. Herzen elucidates and supports his theory. Any one who may read the foregoing paper would do well to study them for himself. So far as they are well-grounded they will serve to correct or confute the opinions which I have propounded, while these in their turn may serve perhaps to show forth the weak points of his theory. To me it seems that he has left a great deal of essential matter out of consideration, not having seemingly realised that there is a twofold *synthesis* or combination to be taken account of in the physiology of our mental life—first, the combination of elements to constitute nerve-substance, on which he does lay stress; second, a combination or union of nervous plexuses to accomplish different functions—their physiological catenation, so to speak, whereby the manifold morphological patterns are formed that become the nervous substrata of the various functions or faculties of mind, so building up the complex and intricate structure of the mental organisation.

II.—THE PERCEPTION OF SPACE. (IV.)[1]

By Professor William James.

5. *The Intellectualist Theory of Space (continued).*

Let me remind the reader of where we left off. I had spoken of the difference which frequently obtains between the form and size of an optical sensation and the form and size of the reality which it suggests; and I had tried to make it clear that, in all common cases, the form and size which we attribute to the reality mean nothing more than certain other optical sensations, now absent, but which would be present under different conditions of observation. I then referred to a residual class of cases on which much stress is laid by such authors as Helmholtz and Wundt. These are cases of *illusion*, cases in which a *presented* form and size are not felt at all, the only thing cognised being what these authors consider to be a demonstrably *inferred* form and size. Were the presented form and size themselves sensations, the authors say, they could not be annulled by inferences; no instance of the suppression of a real sensation by the inferred image of an absent one being known.

I am utterly unconvinced of the truth of this thesis, and of the theory which would explain most of the illusions in point by inferences unconsciously performed. But profitably to conduct the discussion we must divide the alleged instances into groups.

(*a*) With Helmholtz, *colour-perception* is equally with space-perception an intellectual affair. The so-called simultaneous colour-contrast, by which one colour modifies another alongside of which it is laid, is explained by him as an unconscious inference. This chapter on space is not for the discussion of the colour-contrast problem; but I mention it here, because maybe the principles which apply to its solution will prove also applicable to part of our own problem. Hering's treatment of colour-contrast seems, in fact, to have conclusively convicted Helmholtz of error. In my opinion, Hering has definitively proved that, when one colour is laid beside another, it modifies the sensation of the latter, not by virtue of any mere mental suggestion, as Helmholtz would have it,

[1] Concluded from Mind, Nos. 45, 46, 47.

but by actually exciting a new nerve-process, to which the modified feeling of colour immediately corresponds. The explanation is physiological, not psychological. The transformation of the original colour by the inducing colour is due to the disappearance of the physiological conditions under which the first colour was produced, and to the induction, under the new conditions, of a genuine new sensation, with which the "suggestions of experience" have naught to do.

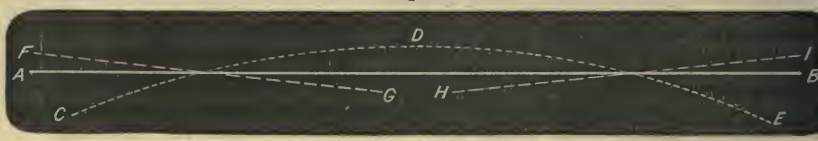
That processes in the visual apparatus propagate themselves laterally, if one may so express it, is also shown by the *phenomena of contrast which occur after looking upon motions* of various kinds. Here are a few examples. If, over the rail of a moving vessel, we look at the water rushing along the side, and then transfer our gaze to the deck, a band of planks will appear to us, moving in the opposite direction to that in which, a moment previously, we had been seeing the water move, whilst on either side of this band another band of planks will move as the water did. Looking at a waterfall, or at the road from out of a car-window in a moving train, produces the same illusion, which may be easily verified in the laboratory by a simple piece of apparatus. A board with a window five or six inches wide and of any convenient length, is supported upright on two feet. On the back side of the board, above and below the window, are two rollers, one of which is provided with a crank. An endless band of any figured stuff is passed over these rollers (one of which can be so adjusted on its bearings as to keep the stuff always taut and not liable to slip), and the surface of the front board is also covered with stuff or paper of a nature to catch the eye. Turning the crank now sets the central band in continuous motion, whilst the margins of the field remain really at rest, but after a while appear moving in the contrary way. Stopping the crank results in an illusory appearance of motion in reverse directions all over the field.

A disc with an Archimedean spiral drawn upon it, whirled round on an ordinary rotating machine, produces still more startling effects. "If the revolution is in the direction in which the spiral line approaches the centre of the disc the entire surface of the latter seems to expand during revolution and to contract after it has ceased; and *vice versâ* if the movement of revolution is in the opposite direction. If in the former case the eyes of the observers are turned from the rotating disc towards any familiar object—*e.g.*, the face of a friend—the latter seems to contract or recede in a

somewhat striking manner, and to expand or approach after the opposite motion of the spiral."[1]

An elementary form of these motor illusions seems to be the one described by Helmholtz on pp. 568-571 of his *Optik*. The motion of anything in the field of vision along an acute angle towards a straight line, sensibly distorts that line.

Fig. 11.



Thus in Fig. 11: Let AB be a line drawn on paper, CDE the tracing made over this line by the point of a compass steadily followed by the eye, as it moves. As the compass-point passes from C to D, the line appears to move downwards; as it passes from D to E, the line appears to move upwards; at the same time the whole line seems to incline itself in the direction FG during the first half of the compass's movement; and in the direction HI during its last half; the change from one inclination to another being quite distinct as the compass-point passes over D.

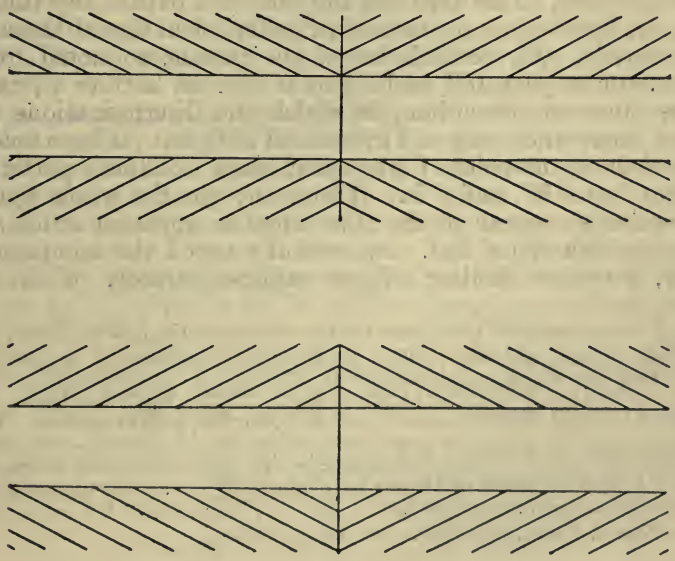
Any line across which we draw a pencil-point appears to be animated by a rapid movement of its own towards the pencil-point. This apparent movement of both of two things in relative motion to each other, even when one of them is absolutely still, reminds us of the instances quoted from Vierordt on page 188, and seems to take us back to a primitive stage of perception, in which the discriminations we now make when we feel a movement have not yet been made. If we draw the point of a pencil through 'Zöllner's pattern' (Fig. 7, p. 343), and follow it with the eye, the whole figure becomes the scene of the most singular apparent unrest, of which Helmholtz has very carefully noted the conditions. The illusion of Zöllner's figure vanishes entirely, or almost

[1] Bowditch and Hall, in *Journal of Physiology*, vol. iii., p. 299. Helmholtz tries to explain this phenomenon by unconscious rotations of the eyeball. But movements of the eyeball can only explain such appearances of movement as are the same over the whole field. In the windowed board one part of the field seems to move in one way, another part in another. The same is true when we turn from the spiral to look at the wall—the *centre* of the field alone swells out or contracts, the margin does the reverse or remains at rest. Mach and Dvorak have beautifully proved the impossibility of eye-rotations in this case (*Sitzungsber. d. Wiener Akad.* Bd. lxi.). See also Bowditch and Hall's paper as above, p. 300.

so, with most people, if they steadily look at one point of it with an unmoving eye; and the same is the case with many other illusions.

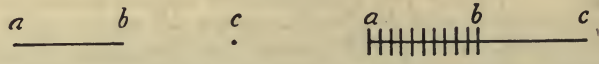
Now all these facts taken together seem to show—vaguely it is true, but certainly—that present excitements and after-effects of former excitements may alter the result of processes occurring simultaneously at a distance from them in the retina or other portions of the apparatus for optical sensation. In the cases last considered, the moving eye, as it sweeps the fovea over certain parts of the figure, seems thereby to determine a modification in the feeling which the *other* parts confer, which modification is the figure's 'distortion'. It is true that this statement explains nothing. It only keeps the cases to which it applies from being explained spuriously. The spurious account of these illusions is that they are intellectual, not sensational. The distorted figure is said to be one which the mind is led to *imagine*, by falsely drawing an unconscious inference from certain premisses of which it is not distinctly aware. And the imagined figure is supposed to be strong enough to suppress the perception of whatever real sensations there may be. But Helmholtz, Wundt, Delboeuf, Zöllner, and all the advocates of unconscious inference are at variance with each other when it comes to the question what these unconscious premisses and inferences may be.

Fig. 12



That small angles look proportionally larger than larger ones is, in brief, the fundamental illusion to which almost all authors would reduce the peculiarity of Fig. 12, as of Figs. 7, 8, 9 (pp. 343, 344). This peculiarity of small angles is by Wundt treated as the case of a filled space seeming larger than an empty one as in Fig. 13; and this, according

Fig. 13.



to both Delboeuf and Wundt, is owing to the fact that more muscular innervation is needed for the eye to traverse a filled space than an empty one, because the points and lines in the filled space inevitably arrest and constrain the eye, and this makes us feel as if it were doing more work, *i.e.*, traversing a longer distance.[1] When, however, we recollect that muscular movements are positively proved to have *no* share in the waterfall and revolving-spiral illusions, and that it is hard to see how Wundt's and Delboeuf's particular form of muscle-explanation can possibly apply to the compass-point illusion considered a moment ago, we must conclude that these writers have probably exaggerated, to say the least, the reach of their muscle-explanation in the case of the subdivided angles and lines. Never do we get such strong muscular feelings as when, against the course of nature, we oblige our eyes to be still; but fixing the eyes on one point of the figure, so far from making that part of the latter seem larger, dispels, in most persons, the illusion of these diagrams altogether. As for Helmholtz, he invokes, to explain the enlargement of small angles,[2] what he calls a "law of contrast" between directions and distances of lines, analogous to that between colours and intensities of light. Lines cutting another line make the latter seem more inclined away from them than it really is. Moreover, clearly recognisable magnitudes appear greater than equal magnitudes which we but vaguely apprehend. But this is surely a sensationalistic law, a native function of our seeing-apparatus. Quite as little as the negative after-image of the revolving-spiral could such contrast be deduced from any association of ideas or recall of past objects. The principle of contrast is criticised by Wundt,[3] who says that by it small spaces ought to appear to us smaller, and not larger, than they really are.

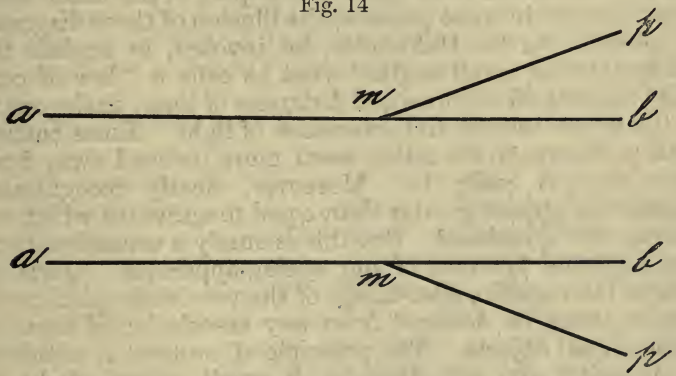
[1] *Bulletins de l'Acad. de Belgique*, xix., 2, *Revue Philosophique*, vi., pp. 223-5 ; *Physiologische Psychologie*, 2te Aufl., p. 103.

[2] *Physiol. Optik.*, pp. 562-71.

[3] *Physiol. Psych.*, pp. 107-8.

Helmholtz might have retorted (had not the retort been as fatal to the uniformity of his own principle as to Wundt's) that if the muscle-explanation were true, it ought not to give rise to just the opposite illusions in the skin. We saw on p. 7 that subdivided spaces appear shorter than empty ones upon the skin. To the instances there given, add this :—Divide a line on paper into equal halves, puncture the extremities, and make punctures all along one of the halves ; then, with the finger-tip on the opposite side of the paper, follow the line of punctures ; the empty half will seem much longer than the punctured half. This seems to bring things back to unanalysable laws, by reason of which our feeling of size is determined differently in the skin and in the retina, even when the objective conditions are the same. Hering's explanation of Zöllner's figure is to be found in Hermann's *Handb. d. Physiologie*, iii. 1, p. 579. Lipps[1] gives another reason why lines cutting another line make the latter seem to bend away from them more than is really the case. If, he says, we draw (Fig. 14) the line *pm* upon the line *ab*, and follow the latter with our eye, we shall, on reaching the point *m*, tend for a moment to slip off *ab* and to follow *mp*, without distinctly realising that we are not still on the main line. This makes us feel as if the remainder *mb* of the main line were bent a little away from its original direction. The illusion is apparent in the shape of a seeming

Fig. 14



approach of the ends *b*, *b*, of the two main lines. This to my mind would be a more satisfactory explanation of this class of illusions than any of those given by previous authors, were it not again for what happens in the skin.

[1] *Grundtatsachen des Seelenlebens*, pp. 526-30.

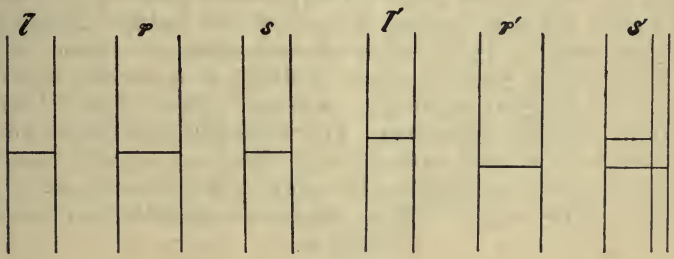
Considering all the circumstances, I feel entirely justified in discarding this entire batch of illusions as irrelevant to our present inquiry. Whatever they may prove, they do not prove that our visual percepts of form and movement may not be sensations strictly so called. They much more probably fall into line with the phenomena of irradiation and of colour-contrast, and with Vierordt's primitive illusions of movement. They show us, if anything, a realm of sensations in which our habitual experience has not yet made traces, and which persist in spite of our better knowledge, *un*suggestive of those other space-sensations which we all the time know from extrinsic evidence to constitute the real space-determinations of the diagram. Very likely, if these sensations were as frequent and as practically important as they now are insignificant and rare, we should end by substituting their significates—the real space-values of the diagrams—for them. These latter we should then seem to see directly, and the illusions would disappear like that of the size of a tooth-socket when the tooth has been out a week.

(*b*) Another batch of cases which we may discard is that of *double images*. A thoroughgoing anti-sensationalist ought to deny all native tendency to see double images when disparate retinal points are stimulated, because, he would say, most people never get them, but *see* all things single which experience has led them to believe to *be* single. 'Can a doubleness, so easily neutralised by our knowledge, ever be a datum of sensation at all?' such an anti-sensationalist might ask.

To which the answer is that it *is* a datum of sensation, but a datum which, like many other data, must first be *discriminated*. As a rule, no sensible qualities are discriminated without a motive. And those that later we learn to discriminate were originally felt confused. As well pretend that a voice, or an odour, which we have learned to pick out, is no sensation now. One may easily acquire skill in discriminating double images, though, as Hering somewhere says, it is an art of which one cannot become master in one year or in two. For masters like Hering himself, or Leconte, the ordinary stereoscopic diagrams are of little use. Instead of combining into one solid appearance, they simply cross each other with their doubled lines. Volkmann has shown a great variety of ways in which the addition of secondary lines, differing in the two fields, helps us to see the

primary lines double. The effect is analogous to that in the cases we despatched a moment ago, where given lines have their space-value changed by the addition of new lines, without our being able to say why, except that a certain mutual adhesion of the lines and modification of the resultant feeling takes place by psycho-physiological laws. Thus, if in Fig. 15 l and r be crossed by an horizontal at the

Fig. 15.



same level, and viewed stereoscopically, they appear as a single pair of lines, s, in space. But if the horizontal be at different levels, as in l', r', three lines appear, as in s'.[1]

Let us then say no more about double images. All that the facts prove is what Volkmann says,[2] that, although there may be sets of retinal fibres so organised as to give an impression of two separate spots, yet the excitement of other retinal fibres may inhibit the effect of the first, and prevent us from actually making the discrimination. Still further retinal processes may, however, bring the doubleness to the eye of attention; and, once there, it is as genuine a sensation as any that our life affords.[3]

(*c*) These groups of illusions being eliminated, either as cases of defective discrimination, or as changes of one space-sensation into another when the total retinal process changes, there remain but two other groups to puzzle us. The first is that of the after-images distorted by projection

[1] See *Archiv. f. Ophthalm.*, v. 2, 1 (1859), where many more examples are given.

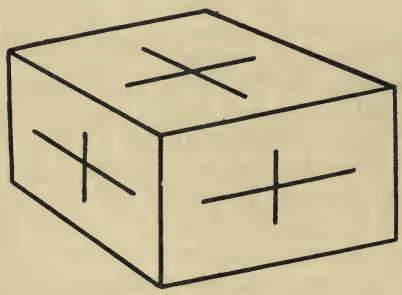
[2] *Untersuchungen*, p. 250; see also p. 242.

[3] I pass over certain difficulties about double images, drawn from the perceptions of a few squinters (*e.g.*, by Schweigger, *Klin. Untersuch. über das Schielen*, Berlin, 1881; by Javal, *Annales d'Oculistique*, lxxxv., p. 217), because the facts are exceptional at best and very difficult of interpretation. In favour of the sensationalistic or nativistic view of one such case, see the important paper by Von Kries, *Archiv. f. Ophthalm.*, xxiv. 4, p. 117.

on to oblique planes ; the second relates to the instability of our judgments of relative distance and size by the eye, and includes especially what are known as pseudoscopic illusions.

The phenomena of the first group were described on page 342. A. W. Volkmann has studied them with his accustomed clearness and care.[1] Even an imaginarily inclined wall, in a picture, will, if an after-image be thrown upon it, distort the shape thereof, and make us *see* a form of which our after-image would be the natural projection on the retina, were that form laid upon the wall. Thus a signboard is painted in perspective on a screen, and the eye, after steadily looking at a rectangular cross, is turned to the painted signboard. The after-image appears as an oblique-legged cross upon the signboard. It is the converse phenomenon of a perspective drawing like Fig. 16, in which really oblique-legged figures are seen as rectangular crosses.

Fig. 16.

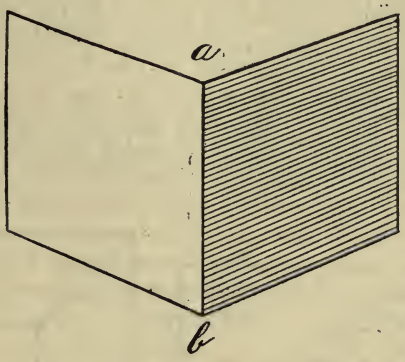


The unstable judgments of relative distance and size were also mentioned on p. 342. Whatever the size may be of the retinal image which an object makes, the object is seen as of its own normal size. A man moving towards us is not sensibly perceived to *grow*, for example ; and my finger, of which a single joint may more than conceal him from my view, is nevertheless seen as a much smaller object than the man. As for distances, it is often possible to make the farther part of an object seem near and the nearer part far. An human profile in intaglio, looked at steadily with one eye, or even both, soon appears irresistibly as a bas-relief. The inside of a common pasteboard mask, painted like the outside, and viewed with one eye in a direct light, also looks convex instead of hollow. So strong is the illusion, after long fixation, that a friend who painted such a mask for me

[1] *Physiologische Untersuchungen im Gebiete der Optik*, v.

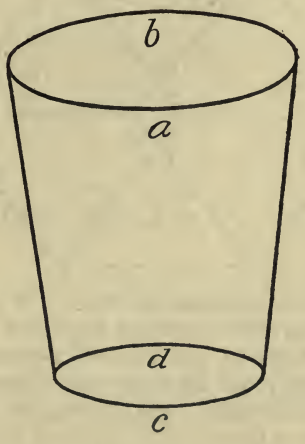
told me it soon became difficult to see how to apply the brush. Bend a visiting card across the middle, so that its halves form an angle of 90° more or less; set it upright on the table, as in Fig. 17, and view it with one eye. You can

Fig. 17.



make it appear either as if it opened towards you or away from you. In the former case, the angle *ab* lies upon the table, *b* being nearer to you than *a*; in the latter case *ab* seems vertical to the table—as indeed it really is[1]—with *a* nearer to you than *b*. Again, look, with either one or two eyes, at the opening of a wine-glass or tumbler (Fig. 18), held either above or below the eye's level. The retinal image of

Fig. 18.



[1] Cp. E. Mach, *Beiträge zur Analyse der Empfindungen*, p. 87.

the opening is an oval, but we can see the oval in either of two ways,—as if it were the perspective view of a circle whose edge *b* were farther from us than its edge *a* (in which case we should seem to be looking down on the circle), or as if its edge *a* were the more distant edge (in which case we should be looking up at it through the *b* side of the glass). As the manner of seeing the edge changes, the glass itself alters its form in space and looks straight or seems bent towards or from the eye,[1] according as the latter is placed beneath or above it.

Plane diagrams also can be conceived as solids, and that in more than one way. Figs. 19, 20, 21, for example, are ambiguous perspective projections, and may each of them remind

Fig 19.

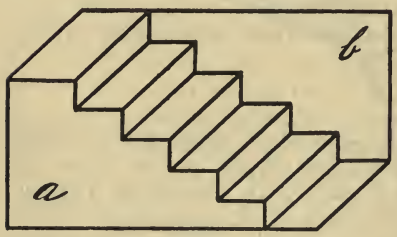


Fig. 20.

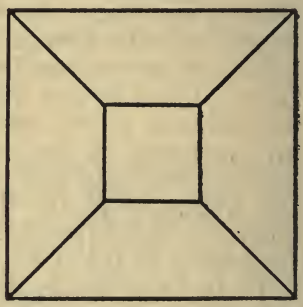
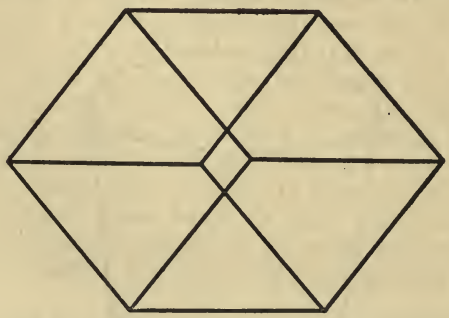


Fig. 21.



us of two different natural objects. Whichever of these objects we conceive clearly at the moment of looking at the figure, we seem to *see* in all its solidity before us. A little practice will enable us to flap the figures, so to speak, backwards and forwards from one object to the other at will.

[1] Cp. V. Egger, *Revue Philos.*, xx. 488.

We need only attend to one of the angles represented, and imagine it either solid or hollow—pulled towards us out of the plane of the paper, or pushed back behind the same—and the whole figure obeys the cue and is instantaneously transformed beneath our gaze.

The peculiarity of all these cases is the ambiguity of the perception to which the fixed retinal impression gives rise. With our retina excited in exactly the same way, whether by after-image, mask or diagram, we *see* now this object and now that, as if the retinal image *per se* had no essential space-import. Surely if form and length were originally retinal sensations, retinal rectangles ought not to become acute or obtuse, and lines ought not to alter their relative lengths as they do. If *relief* were an optical feeling, it ought not to flap to and fro, with every optical condition unchanged. Here, if anywhere, the deniers of space-sensation ought to be able to make their final stand.[1]

It must be confessed that their plea is plausible at first sight. But it is one thing to throw out retinal sensibility altogether as a space-yielding function the moment we find an ambiguity in its deliverances, and another thing to examine candidly the conditions which may have brought the ambiguity about. The former way is cheap, wholesale, shallow; the latter difficult and complicated, but full of instruction in the end. Let us try it for ourselves.

In the case of the diagrams 17, 18, 19, 20, 21, the real object, lines meeting or crossing each other on a plane, is replaced by an *imagined* solid, which we describe as *seen*. Really it is not *seen*, but only so vividly conceived as to *approach* a vision of reality. We feel all the while, however, that the solid suggested is not solidly there. The reason why one solid may seem more easily suggested than another, and why it is easier in general to perceive the diagram solid than flat, seems due to *probability*.[2] Those lines have countless times in our past experience been drawn on our retina by solids for once that we have seen them flat on paper. And hundreds of times we have looked down upon the upper surface of parallelopipeds, stairs and glasses, for once that

[1] The strongest passage in Helmholtz's argument against sensations of space is relative to these fluctuations of seen relief: "Ought one not to conclude that if sensations of relief exist at all, they must be so faint and vague as to have no influence compared with that of past experience? Ought we not to believe that the perception of the third dimension may have arisen *without* them, since we now see it taking place as well *against* them as *with* them?" (*Physiol. Optik.*, p. 817).

[2] Cp. E. Mach, *Beiträge*, &c., p. 90.

we have looked upwards at their bottom—hence we see the solids easiest as if from above.

Habit or probability seems also to govern the illusion of the intaglio profile, and of the hollow mask. We have *never* seen a human face except in relief—hence the ease with which the present sensation is overpowered. Hence, too, the obstinacy with which human faces and forms, and other extremely familiar convex objects, refuse to appear hollow when viewed through Wheatstone's pseudoscope. Our perception seems wedded to certain total ways of seeing certain objects. The moment the object is suggested at all, it takes possession of the mind in the fullness of its stereotyped habitual form. This explains the suddenness of the transformations when the perceptions change. The object shoots back and forth completely from this to that familiar thing, and doubtful, indeterminate and composite things are excluded, apparently because we are *unused* to their existence.

When we turn from the diagrams to the actual folded visiting-card and to the real glass, the imagined form seems fully as real as the correct one. The card flaps over; the glass rim tilts this way or that, as if some inward spring suddenly became released in our eye. In these changes the actual retinal image receives different *complements from the mind.* But the remarkable thing is that the complement and the image combine so completely that the twain are one flesh, as it were, and cannot be discriminated in the result. If the complement be, as we have called it (on p. 348), a set of imaginary absent eye-sensations, they seem no whit less vividly there than the sensation the eye now receives from without.

The case of the after-images distorted by projection upon an oblique plane is even more strange, for the imagined perspective figure, lying in the plane, seems less to combine with the one a moment previously seen by the eye, than to suppress it and take its place.[1] The point needing explanation, then, in all this is how it comes to pass that, when imagined sensations are usually so inferior in vivacity to real ones, they should in these few experiences prove to be almost or quite their match.

[1] I ought to say that I seem always able to see the cross rectangular at will. But this appears to come from an imperfect absorption of the rectangular after-image by the inclined plane at which the eyes look. The cross, with me, is apt to detach itself from this and then look square. I get the illusion better from the circle, whose after-image becomes in various ways elliptical on being projected upon the different surfaces of the room, and cannot then be easily made to look circular again.

The mystery is solved when we note the class to which all these experiences belong. They are 'apperceptions' of definite 'things,' definitely situated in tridimensional space. The mind uniformly uses its sensations to *identify things by*. The sensation is invariably apperceived by the idea, name or 'normal' aspect (p. 349) of the *thing*. The peculiarity of the *optical* signs of things is their extraordinary mutability. A 'thing' which we follow with the eye, never doubting of its physical identity, will change its retinal image incessantly. A cross, a ring, waved about in the air, will pass through every conceivable angular and elliptical form. All the while, however, as we look at them, we hold fast to the perception of their 'real' shape, by mentally combining the pictures momentarily received with the notion of peculiar positions in space. It is not the cross and ring pure and simple which we perceive, but the cross *so held*, the ring *so held*. From the day of our birth we have sought every hour of our lives to *correct* the apparent form of things, and translate it into the real form by keeping note of the way they are placed or held. In no other class of sensations does this incessant correction occur. What wonder, then, that the notion 'so placed' should invincibly exert its habitual corrective effect, even when the object with which it combines is only an after-image, and make us perceive the latter under a changed but more 'real' form? The 'real' form is also a sensation conjured up by memory; but it is one so *probable*, so *habitually* conjured up when we have just this combination of optical experiences, that it partakes of the invincible freshness of reality, and seems to break through that law which elsewhere condemns reproductive processes to being so much fainter than sensations.

Once more, these cases form an extreme. *Somewhere*, in the list of our imaginations of absent feelings, there must be found the vividest of all. These optical reproductions of real form *are* the vividest of all. It is foolish to reason from cases lower in the scale, to prove that the scale can contain no such extreme cases as these; and particularly foolish since we can definitely see why these imaginations ought to be more vivid than any others, whenever they recall the forms of habitual and probable things. These latter, by incessantly repeated presence and reproduction, will plough deep grooves in the nervous system. There will be developed, to correspond to them, paths of least resistance, of unstable equilibrium, liable to become active in their totality when any point is touched off. Even when the objective stimulus is imperfect, we shall still *see* the full convexity of

a human face, the correct inclination of an angle or sweep of a curve, or the distance of two lines. Our mind will be like a polyhedron, with facets, attitudes of perception in which it can most easily rest. These are worn upon it by *habitual* objects, and from one of these it can pass only by tumbling over into another.

Hering has well accounted for the sensationally vivid character of these habitually reproduced forms. He says, after reminding us that every visual sensation is correlated to a physical process in the nervous apparatus:—

"If this psychophysical process is aroused, as usually happens, by light-rays impinging on the retina, its form depends not only on the nature of these rays, but on the constitution of the entire nervous apparatus which is connected with the organ of vision, and on the *state* in which it finds itself. The same stimulus may excite widely different sensations according to this state.

"The constitution of the nervous apparatus depends naturally in part upon innate predisposition; but the *ensemble* of effects wrought by stimuli upon it in the course of life, whether these come through the eyes or from elsewhere, is a co-factor of its development. To express it otherwise, involuntary and voluntary experience and exercise assist in determining the material structure of the nervous organ of vision, and hence the ways in which it may react on a retinal image as an outward stimulus. That experience and exercise should be possible at all in vision is a consequence of the reproductive power, or memory, of its nerve-substance. Every particular activity of the organ makes it more suited to a repetition of the *same;* ever slighter touches are required to make the repetition occur. The organ habituates itself to the repeated activity. . . .

"Suppose now that, in the first experience of a complex sensation produced by a particular retinal image, certain portions were made the special objects of attention. In a repetition of the sensible experience it will happen that notwithstanding the identity of the outward stimulus these portions will be more easily and strongly reproduced; and when this happens a hundred times the inequality with which the various constituents of the complex sensation appeal to consciousness grows ever greater.

"Now in the present state of our knowledge we cannot assert that in both the first and the last occurrence of the retinal image in question the same *pure sensation* is provoked, but that the mind *interprets* it differently the last time in consequence of experience; for the only *given* things we know are on the one hand the retinal image which is both times the same, and on the other the mental percept which is both times different; of a third thing, such as a pure sensation, interpolated between image and percept, we know nothing. We ought therefore, if we wish to avoid hypotheses, simply to say that the nervous apparatus reacts the last time differently from the first, and gives us in consequence a different group of sensations.

"But not only by repetition of the same retinal image, but by that of similar ones, will the law obtain. Portions of the image common to the successive experiences will awaken, as it were, a stronger echo in the nervous apparatus than other portions. Hence it results that *reproduction is usually elective:* the more strongly reverberating parts of the picture yield stronger feelings than the rest. This may result in the latter being quite overlooked and, as it were, eliminated from perception. It may even

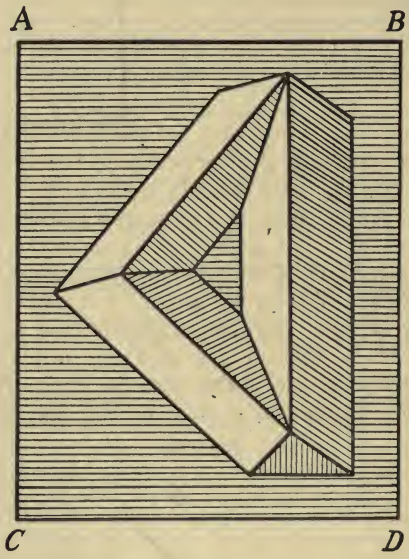
come to pass that instead of these parts eliminated by election a feeling of entirely different elements comes to consciousness—elements not objectively contained in the stimulus. A group of sensations namely, for which a strong tendency to reproduction has become, by frequent repetition, ingrained in the nervous system will easily revive as a *whole* when not its whole retinal image, but only an essential part thereof, returns. In this case we get some sensations to which no adequate stimulus exists in the retinal image, and which owe their being solely to the reproductive power of the nervous apparatus. This is *complementary (ergänzende) reproduction.*

"Thus a few points and disconnected strokes are sufficient to make us see a human face, and without specially directed attention we fail to note that we see much that really is not drawn on the paper. Attention will show that the outlines were deficient in spots where we thought them complete. . . . The portions of the percept supplied by complementary reproduction depend however, just as much as its other portions, on the reaction of the nervous apparatus upon the retinal image, indirect though this reaction may, in the case of the supplied portions, be. And so long as they are present, we have a perfect right to call them sensations, for they differ in no wise from such sensations as correspond to an actual stimulus in the retina. Often, however, they are not persistent; many of them may be expelled by more close observation, but this is not proved to be the case with all. . . . In vision with one eye . . . the distribution of parts within the third dimension is essentially the work of this complementary reproduction, *i.e.*, of former experience. . . . When a certain way of localising a particular group of sensations has become with us a second nature, our better knowledge, our judgment, our logic, are of no avail. . . . Things actually diverse may give similar or almost identical retinal images; *e.g.*, an object extended in three dimensions, and its flat perspective picture. In such cases it often depends on small accidents, and especially on our will, whether the one or the other group of sensations shall be excited. . . . We can see a relief hollow, as a mould, or *vice versâ;* for a relief illuminated from the left can look just like its mould illuminated from the right. Reflecting upon this, one may infer from the direction of the shadows that one has a relief before one, and the idea of the relief will guide the nerve-processes into the right path, so that the *feeling* of the relief is suddenly aroused. . . . Whenever the retinal image is of such a nature that two diverse modes of reaction on the part of the nervous apparatus are, so to speak, equally, or nearly equally, imminent, it must depend on small accidents whether the one or the other reaction is realised. In these cases our previous knowledge often has a decisive effect, and helps the correct perception to victory. The bare idea of the right object is itself a feeble reproduction which with the help of the proper retinal picture develops into clear and lively sensation. But if there be not already in the nervous apparatus a disposition to the production of that percept which our judgment tells us is right, our knowledges strives in vain to conjure up the feeling of it; we then know that we see something to which no reality corresponds, but we see it all the same" (Hermann's *Handb. der Physiologie*, iii. 1, pp. 565-71).

Note that no object not *probable*, no object which we are not incessantly practised in reproducing, can acquire this vividness in imagination. Objective corners are ever changing their angles to the eyes, spaces their apparent size, lines their distance. But by no transmutation of position in space does an objective straight line appear bent, and only in one

position out of an infinity does a broken line look straight. Accordingly, it is impossible by projecting the after-image of a straight line upon two surfaces which make a solid angle with each other to give the line itself a sensible 'kink'. Look with it at the corner of your room: the after-image, which may overlap all three surfaces of the corner, still continues straight. Volkmann constructed a complicated surface of projection like that drawn in Fig. 22, but he found it impossible so to throw a straight after-image upon it as to alter its visible form.

Fig. 22.

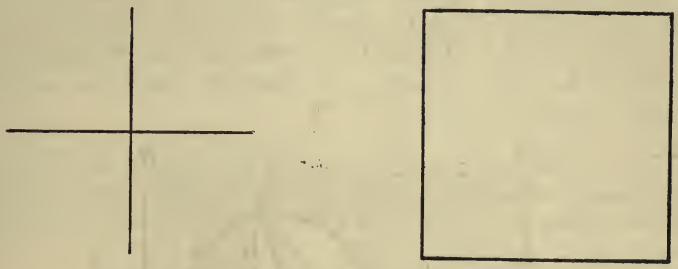


One of the situations in which we oftenest see things is spread out on the ground before us. We are incessantly drilled in making allowance for *this* perspective, and reducing things to their real form in spite of optical foreshortening. Hence if the preceding explanations are true, we ought to find this habit inveterate. The *lower* half of the retina, which habitually sees the *farther* half of things spread out on the ground, ought to have acquired a habit of enlarging its pictures by imagination, so as to make them more than equal to those which fall on the upper retinal surface; and this habit ought to be hard to escape from, even when both halves of the object are equi-distant from the eye, as in a vertical line on paper. Delboeuf has found accordingly, that if we

try to bisect such a line we place the point of division about $\frac{1}{16}$ of its length too high.[1]

Similarly, a square cross, or a square, drawn on paper, should look higher than it is broad. And that this is actually the case, the reader may verify by a glance at Fig. 23.

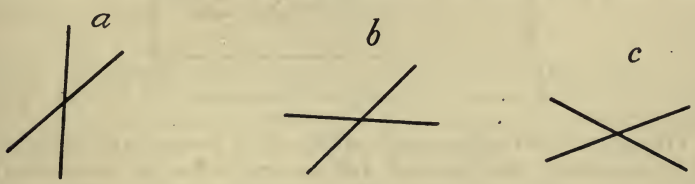
Fig. 23.



For analogous reasons the upper and lower halves of the letter S, or of the figure 8, hardly seem to differ. But when turned upside down, as S, 8, the upper half looks much the larger.[2]

Hering has tried to explain our exaggeration of small angles in the same way. We have more to do with right angles than with any others. Consequently obtuse and acute ones, equally liable to be the images of right ones foreshortened, particularly easily revive right ones in memory. It is hard to look at such figures as *a*, *b*, *c*, in Fig. 24, without seeing

Fig. 24.



[1] *Bulletins de l'Académie de Belgique*, 2me Série, xix. 2.

[2] Wundt seeks to explain all these illusions by the relatively stronger "feeling of innervation" needed to move the eyeballs upwards,—a careful study of the muscles concerned is taken to prove this,—and a consequently greater estimate of the distance traversed. It suffices to remark, however, with Lipps, that were the innervation all, a column of S's placed on top of each other should look each larger than the one below it, and a weather-cock on a steeple gigantic, neither of which is the case. Only the halves of *the same object* look different in size, because the customary correction for foreshortening bears only on the relations of the parts of special *things* spread out before us. Cp. W. Wundt, *Physiol. Psych.*, 2te Aufl., ii. 96-8; Th. Lipps, *Grundtatsachen*, &c., p. 535.

them in perspective, as approximations, at least, to foreshortened rectangular forms.[1]

At the same time the genuine sensational form of the lines before us can, in all the cases of distortion by suggested perspective, be felt correctly by a mind able to abstract from the notion of perspective altogether. Individuals differ in this abstracting power. Artistic training improves it, so that after a little while errors in vertical bisection, in estimating height relatively to breadth, &c., become impossible. In other words, we learn to take the optical sensation before us *pure*.[2]

We may then sum up our study of illusions by saying that they in no wise undermine our view, that every spatial determination of things is originally given in the shape of a sensation of the eyes. They only show how very potent certain *imagined* sensations of the eyes may become.

These sensations, so far as they bring definite forms to the mind, appear to be retinal exclusively. The movements of the eyeballs play a great part in educating our perception, it is true ; but they have nothing to do with *constituting* any one feeling of form. Their function is limited to *exciting* the various feelings of form, by tracing retinal streaks ; and to *comparing* them, and *measuring* them off against each other, by applying different parts of the retinal surface to the same objective thing. Helmholtz's analysis of the facts of our '*measurement of the field of view*' is, bating a lapse or two, masterly, and seems to prove that the movements of the eye have had some part in bringing our sense of retinal

[1] Hering would partly solve in this way the mystery of Figs. 7, 8, and 12. No doubt the explanation partly applies ; but the strange cessation of the illusion when we fix the gaze fails to be accounted for thereby.

[2] Helmholtz has sought (*Physiol. Optik*, p. 715) to explain the divergence of the apparent vertical meridians of the two retinæ, by the manner in which an identical line drawn on the ground before us in the median plane will throw its images on the two eyes respectively. The matter is too technical for description here ; the unlearned reader may be referred for it to J. Leconte's *Sight* in the Internat. Scient. Series, p. 198 ff. But for the benefit of those to whom *verbum sat*, I cannot help saying that it seems to me the *exactness* of the relation of the two meridians—whether divergent or not, for their divergence differs in individuals and often in one individual at diverse times—precludes its being due to the mere habitual falling-off of the image of one objective line on both. Leconte, *e.g.*, measures their position down to a sixth of a degree, others to tenths. This indicates an organic identity in the sensations of the two retinæ, which the experience of median perspective horizontals may roughly have agreed with, but hardly can have engendered. Wundt explains the divergence, as usual, by the *Innervationsgefühl* (*op. cit.* ii. 99 ff).

equivalencies about—*equivalencies*, mind, of different retinal forms and sizes, not forms and sizes themselves. *Superposition* is the way in which the eye-movements accomplish this result. An object traces the line AB on a peripheral tract of the retina. Quickly we move the eye so that the same object traces the line *ab* on a central tract. Forthwith, to our mind, AB and *ab* are judged equivalent. But, as Helmholtz admits, the equivalence-judgment is independent of the way we may feel the form and length of the several retinal pictures themselves:

"The retina is like a pair of compasses, whose points we apply in succession to the ends of several lines to see whether they agree or not in length. All we need know meanwhile about the compasses is that the distance of their points remains unchanged. What that distance is, and what is the shape of the compasses, is a matter of no account" (*Physiol. Optik.* p. 547).

Measurement implies a stuff to measure. Retinal sensations give the stuff; objective things form the yard-stick; motion does the measuring operation; which can, of course, be well performed only where it is possible to make the same object fall on many retinal tracts. This is practically impossible where the tracts make a wide angle with each other. But there are certain directions in the field of view, certain retinal lines, along which it is particularly easy to make the image of an object slide. The object then becomes a "ruler" for these lines, as Helmholtz puts it,[1] making them seem straight throughout if the object looked straight to us in that part of them at which it was most distinctly seen.

But all this need of superposition shows how devoid of exact space-import the feelings of movement are *per se*. As we compare the space-value of two retinal tracts by superposing them successively upon the same objective line, so

[1] "We can with a short ruler draw a line as long as we please on a plane surface by first drawing one as long as the ruler permits, and then sliding the ruler somewhat along the drawn line and drawing again, &c. If the ruler is exactly straight we get in this way a straight line. If it is somewhat curved we get a circle. Now, instead of the sliding ruler we use in the field of sight the central spot of distinctest vision impressed with a linear sensation of sight, which at times may be intensified till it becomes an after-image. We follow, in looking, the direction of this line, and in so doing we slide the line along itself and get a prolongation of its length. On a plane surface we can carry on this procedure on any sort of a straight or curved ruler, but in the field of vision there is for each direction and movement of the eye only one sort of line which it is possible for us to slide along in its own direction continually." These are what Helmholtz calls the "circles of direction" of the visual field—lines which he has studied with his usual care. Cp. *Physiol. Optik*, p. 548 ff.

we also have to compare the space-value of objective angles and lines by superposing them on the same retinal tract. Neither procedure would be required if our eye-movements were apprehended immediately as distinct lengths and directions in space. To compare retinal tracts, it would then suffice simply to notice how it feels to move *any* image over them. And two objective lines could be compared as well by moving different retinal tracts along them as by laying them along the same. It would be as easy to compare non-parallel figures as it now is to judge of those which are parallel.[1]

6. *General Summary.*

With this we may end our long and, I fear to many readers, tediously minute survey. The facts of vision form a jungle of intricacy; and those who penetrate deeply into physiological optics will be more struck by our omissions than by our abundance of detail. But for students who may have lost sight of the forest for the trees, I will recapitulate briefly the points of our whole argument from the beginning, and then proceed to a short historical survey, which will set them in relief.

All our sensations are positively and inexplicably extensive wholes.

The sensations contributing to space-*perception* seem exclusively to be the surface of skin, retina, and joints. 'Muscular' feelings play no appreciable part in our feelings of form, length, direction, &c.

The total bigness of a cutaneous or retinal feeling soon becomes subdivided by discriminative attention.

Movements assist this discrimination by reason of the peculiarly exciting quality of the sensations which stimuli moving over surfaces arouse.

Subdivisions, once discriminated, acquire definite relations of position towards each other within the total space. These 'relations' are themselves feelings of the subdivisions that intervene. When these subdivisions are not the seat of stimuli, the relations are only reproduced in imaginary form.

The various sense-spaces are, in the first instance, incoherent with each other, and, by feeling alone, both they and their subdivisions are often but vaguely comparable in point of bulk and form.

The *education* of our space-perception consists largely of two processes—reducing the various sense-feelings to a com-

[1] Cp. Hering in Hermann's *Handb. der Physiol.* iii. 1, pp. 553-4.

mon *measure*, and *adding them together* into the single all-including space of the real world.

Both the measuring and the adding are performed by the aid of *things*.

The imagined aggregate of positions occupied by all the actual or possible, moving or stationary, things which we know, is our notion of 'real' space—a very incomplete and vague notion in most minds.

The *measuring* of our space-feelings against each other mainly comes about through the successive arousal of different ones by the same *thing*, by our selection of certain ones as feelings of its *real* size and shape, and by the degradation of others to the status of being merely *signs* of these.

For the successive application of the same thing to different space-giving surfaces, motion is indispensable, and hence plays a great part in our space-education, especially in that of the eye. Abstractly considered, the motion of the object over the sensitive surface would educate us quite as well as that of the surface over the object. But the self-mobility of the organ carrying the surface *accelerates* immensely the result.

In completely educated space-perception, the present sensation is usually just what Helmholtz (*Physiol. Optik*, p. 797) calls it, "a sign, the interpretation of whose meaning is left to the understanding". But the understanding is exclusively reproductive and never productive in the process; and its function is limited to the recall of previous space-sensations with which the present one has been associated and which may be judged more real than it.

Finally, this reproduction may in the case of certain visual forms be as vivid, or almost so, as actual sensation is.

The third dimension forms an original element of all our space-sensations. In the eye it is subdivided by various discriminations. The more distant subdivisions are often shut out altogether, and, in being suppressed, have the effect of diminishing the absolute space-value of the total field of view.[1]

7. *Historical.*

Let us now close with a brief historical survey. The first

[1] This shrinkage and expansion of the absolute space-value of the total optical sensation remains to my mind the most obscure part of the whole subject. It is a real optical sensation, seeming introspectively to have nothing to do with locomotor or other suggestions. It is easy to say that "the Intellect produces it," but what does that mean? The investigator who will throw light on this one point will probably clear up other difficulties as well.

achievement of note in the study of space-perception was Berkeley's theory of vision. This undertook to establish two points, first that *distance* was not a visual, but a tactile form of consciousness, suggested by visual signs; secondly, that there is no one quality or "idea" common to the sensations of touch and sight, such that prior to experience one might possibly anticipate from the look of an object anything about its felt size, shape or position, or from the felt touch of it anything about its look.

In other words the primitively chaotic or semi-chaotic condition of our various sense-spaces was established for good by Berkeley; and he bequeathed to psychology the problem of describing the manner in which the deliverances are harmonised so as all to refer to one and the same extended world.

His disciples in Great Britain have solved this problem after Berkeley's own fashion, and to a great extent as we have done ourselves, by the ideas of the various senses suggesting each other in consequence of Association. But, either because they were intoxicated with the principle of association, or because in the number of details they lost their general bearings, they have forgotten, as a rule, to state *under what sensible form the primitive spatial experiences are found*, which later became associated with so many other sensible signs. Heedless of their master Locke's precept, that the mind can frame unto itself no one new simple idea, they seem for the most part to be trying to explain the extensive quality itself, account for it, and evolve it, by the mere association together of feelings which originally possessed it not. They first evaporate the content of extension by making the latter tantamount to mere 'coexistence,' and then explain coexistence as being the same thing as *succession*, provided it be an extremely rapid or a reversible succession. Space-perception thus emerges without being anywhere postulated. The only things postulated are unextended feelings and time. Says Thomas Brown (*Lecture* xxiii.): "I am inclined to reverse exactly the process commonly supposed; and instead of deriving the measure of time from extension, to derive the knowledge and original measure of extension from time". Brown and both the Mills think that retinal sensations, colours, in their primitive condition, are felt with no extension and that the latter merely becomes inseparably associated with them. John Mill says:—"Whatever may be the retinal impression conveyed by a line which bounds two colours, I see no ground for thinking that by the eye alone we could acquire the conception of what we now

mean when we say that one of the colours is outside [beside] the other." [1]

Whence does the extension come which gets so inseparably associated with these non-extended coloured sensations? From the "sweep and movements" of the eye—from muscular feelings. But, as Prof. Bain says, if movement-feelings give us any property of things, "it would seem to be not space, but time".[2] And John Mill says that "the idea of space is, at bottom, one of time".[3] Space then is not to be found in any elementary sensation, but, in Bain's words, "as a quality, it has no other origin and no other meaning than the *association* of these different [non-spatial] motor and sensitive effects".[4]

This phrase is mystical-sounding enough to one who understands association as *producing* nothing, but only as knitting together things already produced in separate ways. The truth is that the English Associationist school, in trying to show how much their principle can accomplish, have altogether overshot the mark and espoused a kind of theory in respect to space-perception which the general tenor of their philosophy should lead them to abhor. Really there are but three possible kinds of theory concerning space. Either (1) there is no spatial *quality* of sensation at all, and space is a mere symbol of succession; or (2) there is a *quality* given immediately in certain particular sensations; or, finally (3), there is a *quality produced* out of the inward resources of the mind, to envelop sensations which, as given originally, are not spatial, but which, on being cast into the spatial form, become united and orderly. This last is the Kantian view. Stumpf admirably designates it as the "psychic stimulus" theory, the crude sensations being considered as goads to the mind to put forth its slumbering power.

Brown, the Mills and Bain, amid these possibilities, seem to have gone astray like lost sheep. With the "mental chemistry" of which the Mills speak—precisely the same thing as the "psychical synthesis" of Wundt, which, as we shall soon see, is a principle expressly intended to do what Association can never perform—they hold the third view, but again in other places imply the first. And, between the impossibility of getting from mere association anything not

[1] *Examination of Hamilton*, 3rd ed., p. 283.

[2] *Senses and Intellect*, 3rd ed., p. 183.

[3] *Exam. of Hamilton*, 3rd ed., p. 283.

[4] *Senses and Intellect*, p. 372.

contained in the sensations associated and the dislike to allow spontaneous mental productivity, they flounder in a dismal dilemma. Mr. Sully joins them there in a vague and vacillating way. Mr. Spencer of course is bound to pretend to "evolve" all mental qualities out of antecedents different from themselves, so that we need perhaps not wonder at his refusal to accord the spatial quality to any of the several elementary sensations out of which our space perception grows. Thus (*Psychology*, ii., 168, 172, 218) :

"No idea of extension can arise from a *simultaneous* excitation" of a multitude of nerve-terminations like those of the skin or the retina, since this would imply a "knowledge of their relative positions"—that is, "a pre-existent idea of a special extension, which is absurd". "No relation between *successive* states of consciousness gives in itself any idea of extension." "The muscular sensations accompanying motion are quite distinct from the notions of space and time associated with them."

Mr. Spencer none the less inveighs vociferously against the Kantian position that space is produced by the mind's own resources. And yet he nowhere denies space to be a specific affection of consciousness different from time!

Such incoherency is pitiful. The fact is that, at bottom, all these authors are really 'psychical stimulists,' or Kantists. The space they speak of is a super-sensational mental product. This position appears to me thoroughly mythological. But let us see how it is held by those who know more definitely what they mean. Schopenhauer expresses the Kantian view with more vigour and clearness than any one else. He says :—

"A man must be forsaken by all the gods to dream that the world we see outside of us, filling space in its three dimensions, moving down the inexorable stream of time, governed at each step by Causality's invariable law,—but in all this only following rules which we may prescribe for it in advance of all experience,—to dream and say that such a world should stand there outside of us, quite objectively real with no complicity of ours, and thereupon by a subsequent *act*, through the instrumentality of mere sensation, that it should enter our head and reconstruct a duplicate of itself as it was outside. For what a poverty-stricken thing is this mere sensation! Even in the noblest organs of sense it is nothing more than a local and specific feeling, susceptible within its kind of a few variations, but always strictly subjective and containing in itself nothing objective, nothing resembling a perception. For sensation of every sort is and remains a process in the organism itself. As such it is limited to the territory inside the skin and can never, accordingly, *per se* contain anything that lies outside the skin or outside ourselves. . . . Only when the Understanding . . . . is roused to activity and brings its sole and only form, the *law of Causality*, into play, only then does the mighty transformation take place which makes out of subjective sensation objective intuition. The Understanding namely grasps by means of its innate, *à priori*, ante-experiential form, the given sensation of the body as an *effect* which as such must necessarily have a

cause. At the same time the Understanding summons to its aid the form of the outer sense which similarly lies already preformed in the intellect (or brain), and which is Space, in order to locate that cause outside of the organism. . . . In this process the Understanding, as I shall soon show, takes note of the most minute peculiarities of the given sensation in order to construct in the outer space a cause which shall completely account for them. This operation of the Understanding is, however, not one that takes place discursively, reflectively, *in abstracto*, by means of words and concepts; but is intuitive and immediate. . . . Thus the Understanding must first create the objective world; never can the latter, already complete *in se*, simply promenade into our heads through the senses and organic apertures. For the senses yield us nothing further than the raw material which must be first elaborated into the objective conception of an orderly physical world-system by means of the aforesaid simple forms of Space, Time and Causality. . . . Let me show the great chasm between sensation and perception by showing how raw the material is out of which the fair structure is upreared. Only two senses serve objective perception: touch and sight. They alone furnish the data on the basis whereof the Understanding, by the process indicated, erects the objective world. . . . These data in themselves are still no perception; that is the Understanding's work. If I press with my hand against the table, the sensation I receive has no analogy with the idea of the firm cohesion of the parts of this mass: only when my Understanding passes from the sensation to its cause, does it create for itself a body with the properties of solidity, impenetrability and hardness. When in the dark I lay my hand on a surface, or grasp a ball of three inches diameter, in either case the same parts of the hand receive the impression: but out of the different contraction of the hand in the two cases my Understanding constructs the form of the body whose contact caused the feeling, and confirms its construction by leading me to move my hand over the body. If one born blind handles a cubical body, the sensations of his hand are quite uniform on all sides and in all directions,—only the corners press upon a smaller part of his skin. In these sensations as such, there is nothing whatever analogous to a cube. But from the felt resistance his Understanding infers immediately and intuitively a cause thereof, which now presents itself as a solid body; and from the movements of exploration which the arms made whilst the feelings of the hands remained constant, he constructs, in the space known to him *à priori*, the body's cubical shape. Did he not bring with him ready-made the idea of a cause and of a space, with the laws thereof, there never could arise, out of those successive feelings in his hand, the image of a cube. If we let a string run through our closed hand, we immediately construct as the cause of the friction and its duration in such an attitude of the hand, a long cylindrical body moving uniformly in one direction. But never out of the pure sensation in the hand could the idea of movement, that is, of change of position in space by means of time, arise: such a content can never lie in sensation, nor come out of it. Our Intellect, antecedently to all experience, must bear in itself the intuitions of Space and Time, and therewithal of the possibility of motion, and no less the idea of Causality, to pass from the empirically given feeling to its cause, and to construct the latter as a so moving body of the designated shape. For how great is the abyss between the mere sensation in the hand and the ideas of causality, materiality, and movement through Space, occurring in Time! The feeling in the hand, even with different contacts and positions, is something far too uniform and poor in content for it to be possible to construct out of *it*, the idea of Space with its three dimensions, of the action of bodies on each other, with the properties of extension, impenetrability, cohesion, shape, hardness, softness,

rest and motion, in short the foundations of the objective world. This is only possible through Space, Time and Causality . . . being preformed in the Intellect itself . . . from whence it again follows that the perception of the external world is essentially an intellectual process, a work of the Understanding, *to which sensation furnishes merely the occasion*, and the data to be interpreted in each particular case."[1]

I call this view mythological, because I am conscious of no such Kantian machine-shop in my mind, and feel no call to disparage the powers of poor sensation in this merciless way. I have no introspective experience of mentally producing or creating space. My space-intuitions occur not in two times but in one. There is not one moment of passive inextensive sensation, succeeded by another of active extensive perception, but the form I see is as immediately felt as the colour which fills it out. That the higher parts of the mind come in, who can deny? They aggregate and summate, they equate and measure, they reproduce and abstract. They inweave the space-sensations with intellectual relations; but *these* relations are the same when they obtain between the elements of the space-system, as when they obtain between any of the other elements of which the world is made.

The essence of the Kantian contention is that there are not *spaces*, but *Space*—one infinite continuous *Unit*—and that our knowledge of *this* cannot be a piecemeal sensational affair, produced by summation and abstraction. To which the obvious reply is that, if any known thing bears on its front the *appearance* of piecemeal construction and abstraction, it is this very notion of the infinite unitary space of the world. It is a *notion*, if ever there was one; and no intuition. Most of us apprehend it in the barest symbolic abridgment: and if perchance we ever do try to make it more adequate, we just add one image of sensible extension to another until we are tired. Most of us are obliged to turn round and drop the thought of the space in front of us when we think of that behind. And the space represented as near to us seems more minutely subdivisible than that we think of as lying far away.

The other prominent German writers on space are also 'psychical stimulists'. Herbart, whose influence has been widest, says "the resting eye sees no space,"[2] and ascribes visual extension to the influence of movements combining with the non-spatial retinal feelings so as to form gradated series of the latter. A given sensation of such a series

[1] *Vierfache Wurzel des Satzes vom zureichenden Grunde*, pp. 52-7.

[2] *Psychol. als Wissenschaft*, § 111.

reproduces the idea of its associates in regular order, and its idea is similarly reproduced by any one of them with the order reversed. Out of the fusion of these two contrasted reproductions comes the form of space[1]—Heaven knows how.

The obvious objection is that mere serial order is a *genus*, and space-order a very peculiar species of that *genus;* and that, if the terms of reversible series became by that fact coexistent terms in space, the musical scale, the degrees of warmth and cold, and all other ideally graded series ought to appear to us in the shape of extended corporeal aggregates,—which they notoriously do not, though we may of course *symbolise* their order by a spatial scheme. W. Volkmann, the Herbartian, takes the bull here by the horns, and says the musical scale *is* spatially extended, though he admits that its space does not belong to the real world.[2] I am unacquainted with any other Herbartian so bold.

To Lotze we owe the much-used term 'Local-sign'. He insisted that space could not emigrate directly into the mind from without, but must be *reconstructed* by the soul; and he seemed to think that the first reconstructions of it by the soul must be super-sensational. But why may not sensations themselves be the soul's *original* spatial reconstructive acts, upon which, of course, other acts of further reconstruction may ensue?

Wundt has all his life devoted himself to the elaboration of a space-theory, of which the neatest and most final expression is to be found in his *Logik* (i. 457-60). He says:—

"In the eye, space-perception has certain constant peculiarities which prove that no single optical sensation by itself possesses the extensive form, but that everywhere in our perception of space heterogeneous feelings combine. If we simply suppose that luminous sensations *per se* feel extensive, our supposition is shattered by that influence of movement in vision, which is so clearly to be traced in many normal errors in the measurement of the field of view. If we assume on the other hand that the movements and their feelings are alone possessed of the extensive quality, we make an unjustified hypothesis, for the phenomena compel us, it is true, to accord an influence to movement, but give us no right to call the retinal sensations indifferent, for there are no visual ideas without retinal sensations. If then we wish rigorously to express the given facts, we can ascribe a spatial constitution only to *combinations* of retinal sensations with those of movement."

Thus Wundt, dividing theories into "nativistic" and "genetic," calls his own a genetic theory. To distinguish it

[1] *Psychol. als Wissenschaft*, § 113.

[2] *Lehrbuch d. Psychol.*, 2te Auflage, Bd. ii. p. 66. Volkmann's 5th Chapter contains a really precious collection of historical notices concerning space-perception-theories.

from other theories of the same class, he names it a " theory of complex local signs ".

" It supposes two systems of local signs, whose relations—taking the eye as an example—we may think as . . . the measuring of the manifold local sign-system of the retina by the simple local sign-system of the movements. In its psychological nature this is a process of associative synthesis: it consists in the fusion of both groups of sensations into a product, whose elementary components are no longer separable from each other in idea. In melting wholly away into the product which they create they become consciously undistinguishable, and the mind apprehends only their resultant, the intuition of space. Thus there obtains a certain analogy between this psychic synthesis and that chemical synthesis which out of simple bodies generates a compound that appears to our immediate perception as a homogeneous whole with new properties."

Now let no modest reader think that if this sounds obscure to him it is because he does not know the full context; and that if a wise professor like Wundt can talk so fluently and plausibly about " combination " and " psychic synthesis," it must surely be because those words convey a so much greater fulness of positive meaning to the scholarly than to the unlearned mind. Really it is quite the reverse; *all* the virtue of the phrase lies in its mere sound and skin. Learning does but make one the more sensible of its inward unintelligibility. Wundt's " theory " is the flimsiest thing in the world. It starts by an untrue assumption, and then corrects it by an unmeaning phrase. Retinal sensations *are* spatial; and were they not, no amount of " synthesis " with equally spaceless motor-sensations could intelligibly make them so. Wundt's theory is, in short, but an avowal of impotence, and an appeal to the inscrutable powers of the soul.[1] It confesses that we cannot analyse the constitution or give the genesis of the spatial quality in consciousness. But at the same time it says the *antecedents* thereof are psychical and not cerebral facts. In calling the quality in question a *sensational* quality, our own account equally disclaimed ability to analyse it, but said its antecedents were cerebral, not psychical—in other words, that it was a *first* psychical thing. This is merely a question of probable fact, which the reader may decide.

And now what shall be said of Helmholtz? Can I find fault with a book which, on the whole, I imagine to be one of

[1] Why talk of 'genetic theories'? when we have in the next breath to write as Wundt does: " If then we must regard the intuition of space as a product that simply emerges from the conditions of our mental and physical organisation, nothing need stand in the way of our designating it as one of the *a priori* functions with which consciousness is endowed.' *Logik*, ii. 460.

the four or five greatest monuments of human genius in the scientific line? If truth impels I must fain try, and take the risks. It seems to me that Helmholtz's genius moves most securely when it keeps close to particular facts. At any rate it shows least strong in purely speculative passages, which in the *Optics*, in spite of many beauties, seem to me fundamentally vacillating and obscure. The "empiristic" view which Helmholtz defends is, that the space-determinations we perceive are in every case products of a process of unconscious inference.[1] The inference is similar to one from induction or analogy.[2] We always see that form before us which *habitually* would have caused the sensation we now have.[3] But the latter sensation can never be intrinsically spatial, or its intrinsic space-determinations would never be overcome as they are so often by the "illusory" space-determinations it so often suggests.[4] Since the illusory determination can be traced to a suggestion of Experience, the "real" one must also be such a suggestion: so that *all* space intuitions are due solely to Experience.[5] The only psychic activity required for this is the association of ideas.[6]

But how, it may be asked, can association produce a space-quality not in the things associated? How can we by induction or analogy infer what we do not already generically know? Can "suggestions of experience" reproduce elements which no particular experience originally contained? This is the point by which Helmholtz's "empiristic" theory, as a *theory*, must be judged. No theory is worthy of the name which leaves such a point obscure.

Well, Helmholtz does so leave it. At one time he seems to fall back on inscrutable powers of the soul, and to range himself with the 'psychical stimulists'. He speaks of Kant as having made the essential step in the matter in distinguishing the content of experience from that form—space, of course—which is given it by the peculiar faculties of the mind.[7] But elsewhere again,[8] speaking of sensationalistic theories which would connect spatially determinate feelings *directly* with certain neural events, he says it is better to assume only such simple psychic activities as we *know* to exist, and gives the association of ideas as an instance of what he means. Later,[9] he reinforces this remark by confessing that he does not see how any neural process *can* give rise without antecedent experience to a ready-made (*fertige*) perception of space. And, finally, in a single

[1] P. 430. [2] Pp. 430, 449. [3] P. 428. [4] P. 442. [5] Pp. 442, 818.
[6] P. 798. [7] P. 456; see also 428, 441. [8] P. 797. [9] P. 812.

momentous sentence, he speaks of sensations of *touch* as if they might be the original material of our space-percepts —which thus, from the optical point of view "may be assumed as *given*."[1]

Of course the eye-man has a right to fall back on the skin-man to help him at a pinch. But this means that he is a mere eye-man and not a complete psychologist. In other words, Helmholtz's *Optics* and the "empiristic theory" there professed are not to be understood as attempts at answering the *general* question of how space-consciousness enters the mind. They simply deny that it enters with the first optical sensations.[2] Our own account has affirmed stoutly that it enters *then;* but no more than Helmholtz have we pretended to show *why*. Who calls a thing a first sensation admits he has no theory of its production. Helmholtz, though all the while without an articulate theory, makes the world think he has one. He beautifully traces the immense part which reproductive processes play in our vision of space, and never —except in that one pitiful little sentence about touch—does he tell us just what it is they reproduce. He limits himself to denying that they reproduce originals of a visual sort. And, so difficult is the subject, and so magically do catch-words work on the popular-scientist ear, that most likely, had he written 'sensationalistic' instead of 'nativistic,' and 'spiritualistic' instead of 'empiristic' (which synonyms Hering suggests), numbers of his present empirical evolutionary followers would fail to find in his teaching anything worthy of praise. But since he wrote otherwise, they hurrah for him as a sort of second Locke, dealing another deathblow at the old bugaboo of 'innate ideas'. His 'nativistic' adversary Hering, they probably imagine—Heaven save the mark!—to be a scholastic in modern disguise.

After Wundt and Helmholtz, the most important anti-sensationalist space-philosopher in Germany is Prof. Lipps, whose deduction of space from an order of non-spatial differences, continuous yet separate, is a wonderful piece of subtlety and logic. And yet he has to confess that continuous differences form in the first instance only a logical series, which *need* not appear spatial, and that wherever it does so

[1] Bottom of page 797.

[2] In fact, to borrow a simile from Prof. G. S. Müller (*Theorie der sinnl. Aufmerksamkeit*, p. 38), the various senses bear in the Helmholtzian philosophy of perception the same relation to the 'object' perceived by their means, that a troop of jolly drinkers bear to the landlord's bill, when no one has any money, but each hopes that one of the rest will pay.

appear, this must be accounted a "fact," due merely "to the nature of the soul".[1]

Lipps, and almost all the anti-sensationalist theorists except Helmholtz, seem guilty of that confusion which Mr. Shadworth Hodgson has done so much to clear away, *viz.*, the confounding the analysis of an idea with the means of its production. Lipps, for example, finds that every space we think of can be broken up into positions, and concludes that in some undefined way the several positions must have pre-existed in thought before the aggregate space could have appeared to perception. Similarly Mr. Spencer, defining extension as an "aggregate of relations of coexistent position," says "every cognition of magnitude is a cognition of relations of position,"[2] and "no idea of extension can arise from the simultaneous excitation" of many nerves "unless there is a knowledge of their relative positions".[3] Just so Prof. Bain insists that the very meaning of space is scope for movement,[4] and that therefore distance and magnitude can be no original attributes of the eye's sensibility. Similarly because movement is analysable into positions occupied at successive moments by the mover, philosophers (*e.g.*, Schopenhauer, as quoted above) have repeatedly denied the possibility of *its* being an immediate sensation. We have however seen that it is the most immediate of all our space-sensations. Because it can only occur in a definite direction the impossibility of perceiving it without perceiving its direction has been decreed—a decree which the simplest experiment overthrows.[5] It is a case of what I have elsewhere (MIND ix. 20) called the 'psychologist's fallacy': mere acquaintance with space is treated as tantamount to every sort of knowledge about it, the conditions of the latter are demanded of the former state of mind, and all sorts of mythological processes are brought in to help.[6] As well might one say that because the world consists of all its parts, therefore we can

[1] *Grundtatsachen des Seelenlebens*, 1883, pp. 480, 591-2.

[2] *Psychology*, ii., p. 174.

[3] *Ibid.*, p. 168.

[4] *Senses and Intellect*, 3rd edition, pp. 366-75.

[5] *Cf.* Hall and Donaldson in MIND x. 559.

[6] As other examples of the confusion, take Mr. Sully: "The *fallacious assumption* that there can be an idea of distance in general, apart from particular distances" (MIND iii., p. 177); and Wundt: "An indefinite localisation, which waits for experience to give it its reference to real space, stands in contradiction with the very idea of localisation, which means the reference to a determinate point of space" (*Physiol. Psych.*, 1te Aufl., p. 480).

only apprehend it at all by having unconsciously summed these up in our head. It is the old idea of our actual knowledge being drawn-out from a pre-existent potentiality, an idea which, whatever worth it may metaphysically possess, does no good in psychology.

My own sensationalistic account has derived most aid and comfort from the writings of Hering, A. W. Volkmann, Stumpf, Leconte, and Schön. All these authors allow ample scope to that Experience which Berkeley's genius saw to be a present factor in all our visual acts. But they give Experience some grist to grind, which the *soi-disant* 'empiristic' school forgets to do. Stumpf seems to me the most philosophical and profound of all these writers. That Hering should have occasionally been fanciful in his assumptions concerning sensations of the third dimension, does not seem to me fatal to the supposition that we have such sensations. In English there is a certain amount of good anti-associationist criticism. The ablest special works are those of Bailey and of Abbott. To the latter author belongs the honour of first in England discussing the question on the basis of the *facts* of vision, of which, having been mainly discovered in Germany, the English associationist authorities were almost uninformed. Dr. E. Montgomery's papers in Vol. x. of MIND contain many valuable introspective remarks and critical observations; but with his notion of an unitary objective space known by the specific energy of a specific central organ, and at definite positions within which we locate each particular sensation, I cannot agree.

III.—THE PLACE OF HYPOTHESIS IN EXPERIMENTAL SCIENCE.[1]

By J. M. Rigg.

The following pages are intended to establish (1) that hypothesis is the principal organon of discovery in experimental science; (2) that hypothesis is based on analogy; (3) that scientific hypotheses are not empirically verifiable. I shall then proceed to enunciate what I conceive to be the postulates of experimental science and the *rationale* of verification, and indicate briefly a view of the relation between physics and metaphysics.

That hypothesis is the principal organon of discovery in experimental science will doubtless seem a hard saying to not a few. The celebrated "Hypotheses non fingo" of Newton seems to act upon many thinkers like a charm; they do not see that the emphasis is to be laid upon the *fingo*. They regard hypothesis as at best but a doubtful auxiliary to observation and experiment, and conceive that the main occupation of experimental science consists in establishing, by what are known as the experimental methods, the existence of invariable relations of coexistence, antecedence and sequence between phenomena. It is not necessary for me to dispute the possibility of establishing by observation and experiment the existence of relations which in a certain sense are invariable. This at present I am concerned neither to affirm nor to deny. I contend, however, that when established such relations do not amount to laws of nature.

In the first place it must be remarked that an uniformity of coexistence or of antecedence and sequence may mean either (1) an observed uniformity or (2) an hypothetical uniformity. So far, however, as laws of nature may consist of hypothetical uniformities, it is clear that the experimental methods alone are powerless to discover them. On the other hand, it can, I think, be demonstrated that no relations of coexistence, antecedence and sequence that are not hypothetical are in the strict sense laws of nature.

If by uniformities of relation we are to understand merely

[1] The substance of this paper was read before the Philosophical Society on 30th November, 1886.

observed uniformities, the impotence of the experimental methods to establish laws of nature becomes patent. Observation, eked out by memory and experiment, may establish an uniformity, but such uniformity only furnishes science with a *datum* on which to found an hypothesis. The experimental methods so elaborately analysed by Mill and Lotze are essentially methods of elimination. The same phenomenon is observed to be sequent, now upon one, now upon another, combination of antecedent phenomena. If then the several sets of antecedent phenomena have a common and only one common element, it is presumable that in the absence of the common element the sequent phenomenon would not occur; and if by observation or experiment we obtain a case in which, no new element being present in the antecedent, the common element is wanting and the sequent phenomenon no longer occurs, we infer—what? Simply that as often as the case is repeated without change in the conditions, the result will be the same. Into the question of the warrant for this inference I do not here enter. The reader is entitled to assume that the warrant is the uniformity of nature, or the principle of identity, or any other principle that he may prefer. All that I am concerned to maintain is that the relation thus established does not amount to a law of causation, even if causation be no more than unconditional invariability of antecedence and sequence[1] between phenomena. The experimental methods cannot establish the existence of any unconditional relations between phenomena. All that they can establish is the existence of relations, the invariability of which is contingent upon the conditions remaining constant. They establish, in fact, conditional invariabilities of relation. Nay more: science distinctly negatives the existence of unconditionally invariable relations between phenomena.

Geology has unrolled the records of past ages during which the forces of nature, though identical in kind with those now operating on the earth, were nevertheless so differently compounded as to produce widely different effects. Most of the sequences of events which were then observable on the planet must have been in striking contrast to any that are now observable; and whether we accept the nebular hypothesis or no, it is clear that the sequences of events now observable in the solar and sidereal systems are far from similar to those which might once have been observed, and

[1] I say sequence because I hold that *con*sequence is more than the empirical theory of causation is entitled to.

that the existing distribution of matter and motion is undergoing a gradual transformation which, when complete, will present to future observers a set of relations of coexistence, antecedence and sequence totally different from any which we observe to-day. If causation were really unconditionally invariable antecedence and sequence between phenomena, none but periodical events could with any plausibility be said to be subject to causation, and of them only such as could be proved to be not subject to modification by counteracting causes; nor even so would any date be assignable when *post hoc* might ripen into *propter hoc*. In fact, however, it cannot be maintained that any observable events there are of which the recurrence is unconditionally invariable. The 'composition' of causes stands in the way.

It is indeed impossible, consistently with the empirical theory of causation, to give a meaning to this expression 'composition of causes'. Two causes may neutralise one another, or be so compounded as to produce a different result from that which either of them operating singly would have produced. Were causation unconditional invariability of antecedence and sequence, this would be impossible. If unconditional invariability has any meaning, an unconditionally invariable relation of antecedence and sequence is one which is in no way modifiable. The composition of two unconditionally invariable events is a contradiction in terms. Nay, in strictness of speech, events are not capable of composition at all; they can only be related in the way either of coexistence, or of antecedence and sequence. It may perhaps be said that the empirical theory of the composition of causes merely means that the simultaneous occurrence of several events is invariably followed by an event different from that which would have invariably supervened upon any one of them occurring singly. This, however, is to abandon the idea of unconditionality. An event which is only followed by another event provided some other event also occurs, is not an unconditionally invariable antecedent, and therefore, on the empirical theory of causation, no cause.

In short, if we define causation as unconditional invariability of antecedence and sequence between phenomena, we have no choice but to hold that only those antecedents upon which the same event always ensues and will ensue "so long as the present constitution of things endures," no matter what other antecedents are combined with them and "under all changes of circumstances," are causes; but, as we do not know that any such antecedents there are, the consistency of

the theory would thus be saved at the expense of its significance.[1]

If, however, the idea of unconditionality be abandoned and causation be defined as conditionally invariable antecedence and sequence between phenomena, then the difficulty presented by the so-called 'plurality of causes' has to be met. If an event may supervene upon any one of several independent antecedents, in what sense can any one of such antecedents be said to be the invariable antecedent of that effect? In the sense, it may perhaps be urged, that, given any one of them, the effect invariably follows. This, however, is to abandon uniformity of antecedence, reducing causation to mere uniformity of sequence; it is necessary to constitute even a conditionally invariable antecedent, not merely that the sequent should invariably follow upon it, but that in default of the antecedent happening the sequent should not happen. If there are several possible antecedents of a given event, no one of them can answer the description of even a conditionally invariable antecedent. Heat, *e.g.*, may be generated in a variety of ways. The Method of agreement enables us to say that, given one or other of certain antecedents, heat will always, in the absence of counteracting causes, be generated. The method of difference establishes that, in the absence of one or other of the said antecedents, heat will not be generated; but it does not entitle us to say that any one of these antecedents is even the conditionally invariable antecedent of the generation of heat; for, though the conditions remain otherwise strictly identical, heat may be generated either by friction, or percussion, or electricity. The method of difference is powerless to eliminate the plurality of causes; that can only be done by hypothesis—by assuming, *e.g.*, in the instance of heat, that at bottom the various modes in which it is generated are identical as being all modes of motion.

Moreover, even in cases into which the plurality of causes does not enter, it cannot without absurdity be maintained that causation is mere conditional invariability of antecedence and sequence. On such a theory high tide would have to be reckoned the cause of low tide, and *vice versâ*. If then, discarding the idea that either unconditionality or antecedence

[1] "That which will be followed by a given consequent, when and only when some third circumstance also exists, is not the cause, even though no case should ever have occurred in which the phenomenon took place without it" (Mill's *Logic*, 8th ed., bk. iii., c. 5, § 6). It is safe to say that no observable event is ever followed by another except conditionally upon some third circumstance being given.

are necessary elements in causation, we define cause as the totality of the conditions which given a phenomenon invariably occurs, which not given it as invariably does not occur, we have to ask what we mean by 'totality of conditions'.

The phrase may mean either the totality of the phenomenal or sensible conditions of a phenomenon, or the totality of its conditions, insensible as well as sensible. Only in the former sense can the totality of the conditions of a phenomenon be ascertained by observation and experiment; but in this limited sense the conditions of a phenomenon are merely so many particular facts, and the fullest account which could be given of them would amount to no more than a description of the phenomenon, its concomitants and antecedents. On the other hand, the causes with which science is concerned are, as I shall show in the sequel, always insensible, the laws which it formulates always hypothetical. If, however, the expression 'totality of conditions' is to include the insensible as well as the sensible conditions of phenomena, it is too wide for practical utility, since the absolute totality of the conditions which determine a phenomenon is only knowable by omniscience. Whatever scientific men mean by cause, they mean neither the empirically uniform antecedents and concomitants of a phenomenon nor the totality of its conditions: they mean more than the one and less than the other.

What then, the reader may ask with some impatience, do you say that they mean? I answer: the distinction between cause and effect is simply one mode of the distinction between the real and the apparent. Physics starts with the postulate that the observed order is not the real order. It regards sensible appearances and their empirically uniform interconnexions as merely indices of a real order, which can only be apprehended by means of the exercise of a faculty which may with indifference be called reason or scientific imagination. Such a conception is implied in the mere use of the terms object and objective, and, as object and subject are correlative, is based upon the rock of self-consciousness. What the object or substance is to a group of sensible perceptions, that the cause is to an event or sequence of events. Physical science is an attempt to give precision to that conception of the world, as other than that which it appears, which is implicit in ordinary experience, and for this purpose its chief instrument is hypothesis. Observation and experiment are indeed indispensable, but only for the purpose of furnishing hypothesis with correct data and testing the adequacy, or, as Lewes well said, the "effectiveness," of a

given hypothesis. Physics assumes what empirical philosophy, if it does not deny, at least will not assert, *viz.*, the existence of a world of noumenal causes and "real essences"; and it is with the attempt to define the nature of these noumenal causes and real essences that induction in the strict sense begins. It is probably because they come to the subject with minds clouded by sensational metaphysics that logicians of the empirical school have overlooked this fact. They have described rather the method of their own philosophy than that of physical science, which is not so much empirical as theoretic.

Had the aim of the early physicists been merely to observe and tabulate uniformities of relation, it is not too much to say that neither astronomy nor physics would have come into being. By the method of observing and registering relations of coexistence, antecedence and sequence alone, we could never have come by the knowledge even of the sun, moon and stars. Had causation meant for the early thinkers invariability of antecedence and sequence (and how could they have distinguished between conditional and unconditional invariability?), they would have noted the fact that the emergence of a luminous disc from below the horizon was the uniform antecedent of day and its disappearance the uniform antecedent of night, and there the matter must have ended. The hypothesis that both phenomena were occasioned by the motion of a vast body so distant from the earth as to present to them the appearance of a mere disc of light could only have been framed by men who believed in a world transcending experience and sought to define it. Pythagoras in substituting the idea of the sun as the centre of the planetary system for that of the earth, the Alexandrian astronomers in reconciling the apparent motions of the sun and planets with the immobility of the earth by their elaborate theory of epicycles and eccentrics, Copernicus in showing that the Pythagorean theory, while simpler than the Ptolemaic, explained at once the apparent motions of the sun and planets and the apparent immobility of the earth,—all employed a method which was certainly inductive, but at the same time boldly set at nought the testimony of the senses and transcended experience. The motions of the planets are no more phenomena than are the ultimate atoms of which their substance is supposed to be constituted; they are not empirically verifiable, but we know that if they take place they must present to us the appearances which we see, and we assume their existence because we are unable to deduce the phenomena from any

hypothesis which introduces a larger measure of unity into our conception of the objective conditions of the said phenomena. Similarly, physics originated in the attempt to define the essential nature of material substance. Thales saw all things in water, Anaximenes in air, Heraclitus in fire, Anaxagoras supposed matter to be constituted of minute invisible particles, but apparently failed to conceive of these particles as essentially homogeneous. An immense stride was taken in this direction when Democritus attempted to explain the secondary qualities of matter as resulting from differences in the arrangement of the ultimate particles. In modern times all the secondary qualities except flavour and odour have been resolved into modes of molecular motion. Had not the thinkers to whom we owe the molecular theory believed in a "real essence" underlying material phenomena, and in the possibility of defining that "real essence"—had they been, in a word, imbued with the principles of modern empirical philosophy, and content to abide in the outward shows of things, noting and registering such relations as were uniform—physics had never been.

The causes of events in the sense explained may or may not be conceived as events or sequences of events, but the relation between cause and effect is always one of coexistence; nor does science rest content with a cause which is merely an event or a sequence of events.

The first hypothesis concerning the cause of an event usually consists in treating it as the index of some other but insensible event suggested by analogy. Logicians of the empirical school regard analogy as distinct from induction, and treat it with scant respect; but, as Lotze has pointed out (*Logic*, § 274), hypothesis ought to rest upon analogy.

Young is said by a flash of genius to have seen, in the darkness which resulted from the fusion of two beams of light in Grimaldi's experiment, the analogue of the stillness produced by the neutralisation of one wave by another. This was the germ of the undulatory theory of light. In the case of the molecular theory of sound the analogy was more obvious. There the *experimentum crucis* was the ringing of a bell in a receiver nearly empty of air, the sound being scarcely audible. It was then clear that in so far as the vibrations of the resonant surface failed of affecting the ear, it was for want of propagation by the air, and the analogy of the ripple propagated in a gradually widening circle round an object dropped into water came to hand at once. If the latter was explicable as an agitation of particles, each of which after communicating its motion to its neighbour re-

turned to rest, so also might conceivably the propagation of sound be explained. It also lay on the surface that pitch might vary as the velocity of the undulations; and, the fact (proved by Newton) that the rate of propagation is constant for all degrees of loudness according with the fact that the rate of propagation of visible waves is constant for all degrees of amplitude or range of swing, it was inferred that loudness varies with the amplitude of the sound-wave. These essential points settled, it only remained to adapt the theory to the exigencies of special cases. Even Helmholtz's analysis of the composition of musical notes is of this kind. From the familiar fact that harmony is pleasant he inferred that a musical note was probably itself a harmony, and the results obtained by magnifying sound by mechanical appliances accorded with his hypothesis.

In like manner the theory that the celestial luminaries are solid bodies similar to the earth can only have been reached by a process of analogical reasoning. Anaxagoras, *e.g.*, was clearly reasoning by analogy when he broached the theory that the sun and stars were masses of stone ignited by the force of rotation. Again, the molecular theory involves the hypothetical endowment of that which to sense is perfectly simple with a complex structure analogous to that with which we are familiar in composite bodies. It also is a mere analogy, unverifiable empirically but accepted because it enables us to assimilate the infra-sensible to the sensible world.

Nay, the very conception of an object is an analogical transference of the unity and identity which we know as self to that which in itself is a mere cluster of perceptions, and the idea of force, as Mr. Spencer is fond of telling us, is derived by analogy from the experience of volition.

Now if hypothesis is, as I hold, the most important part of the inductive process, it follows that the principle of induction is aptly expressed in the much-criticised Newtonian canon: "Effectuum naturalium ejusdem generis eædem sunt causæ".[1] On the strength of a similarity in the phenomena, which may be obvious or may be recondite, a similarity in the causes which determine them is inferred, and an attempt is then made to deduce the phenomenon from the hypothesis, which is accepted or rejected according as it does or does not admit of such deduction. Hence a subtle power of detecting recondite resemblances, boldness in assuming essential identity of conditions on the strength thereof, and

[1] Cp. Lotze's *Logic*, p. 317.

patience in making the observations and ingenuity in contriving the experiments necessary to test the theory, are alike indispensable to scientific progress. I have said that science does not rest content with explaining phenomena in terms of events. This is especially true of modern science, which is chiefly distinguished from ancient science by the prominence given to the idea of force.

Phenomena having been explained in terms of insensible motion, molar and molecular, these latter are in their turn explained in terms of force. Dynamism would be more appropriate than Materialism as a designation of the modern scientific movement, the idea of inertia having given place to that of an equilibrium of forces.

Of force the empirical logic knows not what to make: it is difficult to extract from its exponents any consistent doctrine on the subject. As, however, Mill illustrates his chapter on the composition of causes by examples of the composition of forces, it is safe to assume that he at least regarded force as synonymous with cause, and therefore reducible to uniformity of antecedence. This view, however, is radically unscientific. Science does not regard force as anteceding its results at all: it regards them as strictly synchronous. Gravitation, cohesion, chemical affinity, do not antecede the various phenomena which they condition, but are exhibited in them. The force of which Mr. Spencer writes with such impressiveness is neither an event nor any number of events, but the condition of all events happening. The conception is indispensable to science, which, as I have said, cannot rest in mere events; but it is not empirically verifiable. Even if we take the step which Mr. Spencer declines to take, and identify physical forces with that force which we know immediately as exerted by ourselves in volition, still the projection of such force into the universe at large remains a mere analogy wholly "unsusceptible of being ultimately brought to the test of actual induction".

If the foregoing account of causation and scientific method is true, a law of causation will be definable as an hypothesis by which several events or sequences of events are deduced from one and the same cause or combination of causes. As such it will be a relation not of sequence, but of coexistence and community. There will thus be no radical distinction between cause and law; rather every cause so soon as defined will be itself a law, provided only the phenomena are deducible from it. A law, in fact, is simply the definition of a given cause. This point is so clear that illustration

may seem superfluous. I need therefore only remind the reader that the essence of the law of gravitation consists in its connecting facts so disparate as the fall of a stone and the persistence of the planets in their orbits as effects of one and the same cause; that the molecular theory of heat identifies the cause of the sensation, no matter what the sensible antecedent may have been, with an agitation of the insensible particles of matter; that Lavoisier's theory of combustion traces processes so apparently diverse as calcination, combustion and acidification to the operation of the same force, *viz.*, oxygen.

To sum up the matter: physical science presupposes the determination of phenomena by objective conditions or causes; observation establishes empirical rules to the effect that certain phenomena have hitherto, so far as experience has extended, coexisted with or ensued upon certain other phenomena; experiment purifies these rules from all unessential elements by the process of elimination analysed by Mill; the result is the formulation of conditional uniformities of coexistence, antecedence and sequence; then begins the process of induction in the strict sense, which consists in framing an hypothesis based on analogy concerning the nature of the causes which determine the uniformity in question; the hypothesis, when framed, is tested by attempting to deduce the phenomena from it with the help, if necessary, of experiments to test the adaptability of the theory to special cases. This last process is sometimes called verification, and no doubt in a certain relative sense it is so. Verification, in the sense of strict proof, it certainly is not, since even if the hypothesis stands the test its absolute truth is not thereby established.

The principal use of the process commonly known as verification is not to verify, but to disprove. It is a criterion rather of error than of truth. If we were to adopt the view that mere deduction of the phenomena from the hypothesis, together with the fact that the theory has been so articulated as to meet all special cases as yet given by nature or invented by experiment and to serve as an instrument of prediction, amounted to absolute proof, we should land ourselves in the absurd position that what is proved to-day may be disproved to-morrow, since hypotheses which explain certain facts perfectly well are sometimes superseded by others which explain them not a whit better, but happen to have a wider range of applicability; it is very difficult, in any given instance, to say that the resources of analogy have been exhausted. That some limit to the powers of the human

mind in explaining phenomena there must be, is clear; the difficulty is in proving that it has been reached. Nor, if we suppose that in certain fields it has been reached, does that fact warrant us in assuming the absolute truth of the hypothesis in question. It may not be possible for us to attain absolute truth by means of hypotheses.

Mill distinguished between hypotheses which rest on mere analogy and such as are capable of "being ultimately brought to the test of actual induction," claiming for the latter a verifiability which he denied to the former (*Logic*, 8th ed., vol. ii., pp. 15, 94). And on this ground he refused the title of "positive truths" to both the emission and the undulatory theory of light. In fact, however, neither of these theories stands in a worse position than the commonplace hypothesis of an atmosphere. The atmosphere is just as little capable of being brought to the test of actual induction as is the luminiferous ether. Its existence is assumed upon the analogy of watery fluid for the purpose of accounting for certain phenomena, just as is the existence of the ether. We are so familiar with the hypotheses of an atmospheric medium that we have ceased to regard it as an hypothesis, and it requires a certain effort of thought to realise that it is so; yet nothing can be more certain than that if we had no experience of visible fluid, however we might explain the motions of the clouds and the pressure of the air upon us, it could not be by means of an atmosphere. We should have no experience capable of yielding the notion. It is clear therefore that the atmosphere, as distinct from the perceptions for which it accounts, is not, strictly speaking, a "real phenomenon"; is not, in fact, a sensible, but a mere hypothesis. It is possible that at some future time the idea of a luminiferous ether may be so familiar that its hypothetical character may be forgotten. In any case it is impossible to draw any valid distinction between the two hypotheses, except so far as the hypothesis of an ethereal medium may not have been so thoroughly tested as the hypothesis of an atmospheric medium has been. The latter hypothesis is, however, accepted for no other reason than that it explains certain facts, and enables us to interpret them as the result of undulations of the said medium; and until men shall have acquired the porcine faculty of seeing the wind it will remain entirely "unsusceptible of being brought to the test of actual induction".

It follows that the theory of sound, which is based upon the hypothesis of an aerial medium, is not empirically verifiable. Nay the entire molecular theory is incapable of em-

pirical verification, and so is the Copernican theory: they explain phenomena, but not by means of causes which are themselves phenomena.

If then, it will be asked, laws of causation are hypotheses, and as such liable to supersession, what becomes of the immutability which is commonly supposed to be essential to a law of nature? The answer seems to be that the idea which underlies our ascription of immutability to laws of nature does not stand or fall with the truth or otherwise of laws of causation, but is really identical with the uniformity of nature. The uniformity of nature involves five principles, which are: (1) that every event is the index of a cause or combination of causes; (2) that no event is the index of more than one cause or combination of causes; (3) that, given the proper cause or combination of causes, in the absence of counteracting causes, the effect always occurs; (4) that the sum total of ultimate causes is a fixed quantity; (5) that the causes existing in the universe are so related, *inter se*, that in virtue of their mutual modification change, though incessant, is on the whole gradual.

The first of these principles we have already discussed at length; the second is clearly required by the uniformity of nature. If the same effect might indicate any one of several alternative causes, there would manifestly be a breach of uniformity. In the case *e.g.*, of heat, where if anywhere there might seem to be a plurality of causes (as friction, percussion, electrical and chemical action), the uniformity of nature requires and science has established that there is but one cause, *viz.*, molecular motion.[1]

The third principle, *viz.*, that, given the cause and no counteracting causes, the effect always happens, is equally necessary to the uniformity of nature. If it were not true physics would be impossible. The fourth principle, that the

[1] The application of the molecular theory to heat is one of the most interesting examples of the true inductive method. By the liquefaction of two pieces of ice by mutual friction Davy proved that the accepted theory, which identified the objective correlative of the sensation with a subtle fluid (caloric), permeating bodies and forced out of them by friction, could not possibly be true, since a body which had parted with a certain quantity of caloric by friction, as according to the theory the melted ice had done, must require the application of more caloric to raise it to a certain degree of temperature than it required before, and this was not true of the water into which the ice had been converted by the friction, its temperature being higher than that of the ice. And as the effect of friction was already conceived to be an agitation of the molecules constituting the rubbed body, Davy inferred that such an agitation was the objective correlative of the sensation of heat.

sum total of ultimate causes is a fixed quantity, follows from the first; for the coming into being of a new ultimate cause, or the passing out of existence of an old one, would be an uncaused event. The fifth principle, that of the reciprocal action of causes, is essential to the idea of an universe. If any cause or set of causes was unrelated to the rest, there would be, strictly speaking, no universe. If, *e.g.*, the forces which make for rest and those which make for motion were unrelated, there would be two worlds but no universe—a world in which everything was at rest and a world in which change was perpetual and universal, but no transition from motion to rest and rest to motion. There would thus be no universe, no organic unity of things. It is clear therefore that the existence of the universe implies that the statical and dynamical forces do interact. It is further implied that such forces are equal in amount. If, *e.g.*, there were a preponderance of the statical over the dynamical forces, the universe must eventually pass into a state of complete quiescence. This would, however, involve the impossible supposition of a last event. It follows that the statical and dynamical forces must be regarded as equivalent. If, however, they were also equally distributed, it is plain that no change could ever occur. Hence we must regard them as equivalent indeed but unequally distributed. It is further clear that, if this inequality of distribution were very great, the universe would present the aspect of a series of cataclysmic changes, instead of the incessant but gradual change which we know and which is implied in the uniformity of nature. Nor is it possible to conceive that the universe will ever enter upon a period of general and continuous cataclysmic change. The violence of change is proportionate to the resistance offered; hence every cataclysm presupposes a period during which the statical forces have been largely predominant, during which the dynamical forces have slowly accumulated. No rapid and general succession of cataclysmic changes is therefore possible.

These principles constitute, in my opinion, what we mean by the uniformity of nature and the immutability of law. They are indispensable to physics, but they are not empirically verifiable; the only verification of which they are susceptible is just their indispensability. They are principles of the possibility of physical science. Laws of causation, on the other hand, are figurative schemata whereby the essential unity of the universe is bodied forth to the eye of imagination. As such they are not devoid of truth, and indeed of positive truth. An idealist who holds that matter and force

have no existence apart from consciousness is not bound to deny the positive truth of any scientific theory which furnishes the best available explanation of the phenomena it purports to explain. In fact, it is just positive truth which he will allow to such an hypothesis; *i.e.*, he regards it as a necessary moment in the process by which the human mind comes by the knowledge of the essential unity of the cosmos. Its verification consists in this necessity. Such verification may be called transcendental as distinguished from empirical verification. At the same time he will certainly deny the absolute truth of all such hypotheses. The scientific Pegasus is a noble animal, and his rider extremely bold; but "post equitem sedet atra cura"; Nemesis rides on the croup in the shape of the metaphysician, and will not be shaken off no matter how rough the pace may be. Metaphysics, in fact, is related to physics, as physics is related to experience. The ideal world of physics satisfies the metaphysician as little as the world of sense-perception satisfies the physicist. His procedure is of the simplest kind, and consists in merely pointing out that an idea is an idea and therefore relative to consciousness, and that by consequence the entire body of scientific hypothesis has only a relative validity. Those who think otherwise he shows to be still in the bondage of Scholasticism—to be in fact no better than those mediæval thinkers who mistook the connotation of a common term for a real essence residing in things. In short, he pushes the principle of conceptualism to its logical issue. By degrees a dim perception of his meaning dawns upon the scientific mind, and therewith the half-suspicion that he may be right. Accordingly an attempt is made to meet him half-way. Hence arise two schools of scientific thinkers. Both agree in admitting the relativity of scientific theory; but, while one denies the power of the human mind to reach absolute truth, the other joins hands with those who are only just emerging from the realism of common sense in order to find the absolute in that of which nothing in particular can be said. The first school virtually admits that science is an illusion, and erects its own speculative incapacity into a standard of human faculty. The second differs but by a hair's-breadth from the first, and that difference is not on the side of logic. This poor *caput mortuum*, this absolute, this unconditioned, which it is sought to purge of all subjective elements, after all, it must be admitted, exists, and on this admission the metaphysician pounces with avidity. 'You tell me,' he says, 'that the absolute and the relative are wholly heterogeneous, yet you predicate of both this same attribute, exist-

ence. It is idle to assert that existence as absolute is totally different from existence as relative; for that is merely to admit that your system is based upon an equivocation. Existence, like every other term, denotes an idea, and as such its import is relative to consciousness. You will not assert that the existence of a cognition is anything more than its being known. To assert then that that which is neither known nor knowable exists is simply to contradict yourself. You claim, in fact, to transcend consciousness, and though experience may, consciousness cannot, be transcended. If we could know that the unknowable exists, we should as surely transcend consciousness as if we knew exactly how it exists. You have no logical alternative but either to deny existence to consciousness or to admit that the unknowable does not exist. As matters stand, you are cheating yourself with an abstraction.'

In truth it is not the metaphysician who seeks to transcend consciousness, but the scientific or quasi-scientific thinkers, who cannot see that a term is none the less relative that it is abstract, who surrender to the idealist the concrete world of perception and imagination only to mistake for things in themselves those ideas which of all others are the most attenuated, the nearest to insignificance.

The metaphysician, however, in holding by the doctrine that existence is limited by consciousness, does not mean to deny the existence of the objective universe which science postulates. It is his proper problem to reconcile physics and idealism—a problem which I must content myself on this occasion with thus barely indicating.

IV.—DISCUSSION.

MR. F. H. BRADLEY'S ANALYSIS OF MIND.

By James Ward.

In the last number of Mind (pp. 354 ff.), Mr. Bradley has further expounded those views of his concerning general psychology which I had occasion to criticise incidentally in the number but one previous. The main purpose of my article was to exhibit certain imperfections of psychological terminology. For this imperfection, I conceived, the subject-matter of the science is to blame rather than its exponents, and I was fully sensible of the truth of Prof. Bain's remark, that "it will be long ere we attain an unimpeachable phraseology for the highest generalities of mind". Still it seems always worth while to see what is faulty in our work even if we cannot straightway correct it. I ventured accordingly to institute a comparison between the logical exactness of physical definitions and the "varying use of terms involving incompatible implications and the surreptitious changes of standpoint that mark even the clearest psychological writing". It was in this connexion that I came across Mr. Bradley's article on "Attention" in Mind No. 43. It was not within my purpose to discuss his views in detail: my contention as regards him was merely that his fundamental conceptions and his method were false; and in venturing now to remark further upon these as they appear in his last article, I do not purpose to touch one way or other on its main theme—the psychological genesis of Thought.

Mr. Bradley's main position, as I understand it, may be stated thus:—All psychical facts are presentations, and,—symbolising presentations as a, b, c,—the laws of psychology are the laws of the interaction of such a, b, c, that is, of their differentiations, conjunctions, conflicts, fusions, associations and so forth. All that is covered by the terms Consciousness or Mind is resolvable into various combinations or relations of these psychical a, b, c: as there is no water till oxygen and hydrogen combine as H_2O, so there is no self or subject and no activity till the interactions of presentations "generate" the appropriate "groups". Mr. Bradley does not merely say: The subject at the beginning does not know itself—a statement which perhaps no one would question. What he says is: There is nothing but feeling there. Out of an originally undifferentiated x arise in accordance with psychical laws the subject, objects and activity, which others maintain are implied in the very conception of psychical existence, and which, they hold, must be thought by the psychologist in de-

scribing the individual's development, notwithstanding that the individual himself has no such presentations at the outset.

One reason given for excluding these conceptions from psychology is, that they are neither facts nor laws, but "rags of metaphysics," and "we have in science to do solely with events and their laws". Now if this objection had been urged by some of our excellent friends the physiologists, I should probably admit it at once: they are making valuable contributions to the superstructure of psychology, and it is best not to put them out of conceit with us by raising difficulties, the force of which they would not feel. But with a writer who has given to the world a book on the principles of knowledge it is otherwise. Accordingly I venture to request that writer to consider and to explain to us what he understands by "doing in science"; and in the meantime confess that I have assumed that science deals with facts only by means of ideas. Brute facts will never make a science of themselves, and we cannot get ideas out of them till we have put ideas in.

Further, when the physiologists (for whose superior ability and surpassing devotion, by the way, Mr. Bradley has extraordinary respect) talk of rags of metaphysics, we know what they mean, and take their rebukes meekly. But from a philosopher we reasonably look for more precision. It is one thing to keep science clear of ontological speculations; it is quite another to refuse to give adequate definitions of conceptions that have various implications within science itself. The first procedure is wise and sober; the second is slovenly and confusing. We may be quite sure the first is what Mr. Bradley intends; but then comes the question: How are we to ascertain the conceptions that for psychology are simple and ultimate? So far as I can see, Mr. Bradley does not tell us. My own view was that those conceptions, and those only, are ultimate for a particular science, whether actually so or not, which, like compound radicals in organic chemistry, so to say, never require analysis within the science itself. Tried by this test, Mr. Bradley's "working definitions" prove insufficient.

In all other sciences the term 'phenomenon' and its equivalents may be used without more ado: in psychology they cannot. Now, Mr. Bradley talks of presentations as if they were simply phenomena: he proposes to "take 'given' or 'presented' not as implying a donation or even a relation to an Ego, but rather for that which is simply" (p. 364, *fin.*). This is all very well when we are busied with the external world; for, though it is obvious that given and presented always *imply* donation or relation, yet the term implied can be neglected when we are talking of sounds, or colours, or storms, or trees; they are there for anybody and everybody, for nobody in particular. When, therefore, we speak of 'chemical' phenomena or 'astronomical' phenomena, it is only to distinguish one kind of phenomena from another. But

'psychical' does not qualify phenomenon simply in this sense. A psychical event is not a mere *a* as distinct from a chemical event which is a *b*, or an electrical which is a *c*; for *b* and *c* become psychical events so soon as we regard them as part of the experience of a particular M or N. This is a point that seems past all disputing, as even Mr. Bradley's own language may serve to show. Pyschology occupies what I have called the individualistic standpoint,—not by way of excluding metaphysics, as Mr. Bradley supposes, nor by choice at all, but of necessity, in order to be psychology. And this necessity asserts itself, I say, in Mr. Bradley's definition of his events as "the facts immediately experienced within a single soul or organism". "'Experience,'" he adds, "is not definable: it can only be indicated." Very good; let it be indicated. To what will Mr. Bradley direct us? Will he say: 'The sun shines, Honey is sweet: these are facts, are experience'? Is it not obvious that he will say: '*You* see or feel the sunshine; *That bee* tastes the honey-sweet, or the like'? In other words, "immediate experience within a single soul or organism" is not *a* or *b*, sunlight or honey-sweet simply, but *a* or *b* as they are for some sentient, percipient or intelligent subject. I have endeavoured to express this symbolically by saying that the psychical fact is *Spa* or *Spb* or generally *Spo*. The difference in question is recognised in the old scholastic distinction of *esse reale* and *esse intentionale*, and more ambiguously in the modern one of subjective and objective. Half the problems of philosophy spring from this difference, and if it could be resolved into a difference of phenomena we should have heard the last of such problems long ago. It may be that the difficulties which have so often driven speculation from idealism to realism, and from realism back to idealism, may never be resolved; but this is no warrant for trying to suppress a distinction which is, so to speak, in the nature of things. I have never said that psychologists should be idealists as metaphysicians; but that they do and must occupy an idealist standpoint in scientifically expounding the facts of mind, just as the physicist does and must occupy a realist standpoint in treating scientifically of the facts of matter. It is the endeavour to transcend this dualism, not the frank recognition of it, that is really an intrusion of speculation into science.

Within that important department of psychology occupied with the quality, duration and intensity of presentations, or with their interactions—"the machinery," as Mr. Bradley calls it—it is often convenient to regard a presentation as *a*, or *b*, or *c*. But before we have done with psychical facts, we have to take account of what is meant by "immediate experience". Whether or no they can settle "the amount of continuity and ideal identity required to make a single soul," Mr. Bradley, and psychologists too, have to admit, tacitly at least, that presentation implies consciousness, and that consciousness implies a subject and activity.

Herbart, who may be said to have suppressed the old tripartite classification into cognitions, emotions, volitions, only made the more prominent the distinction between the *vorstellende Seele* and its *Vorstellungen*. Our English Associationists again, with whom Mr. Bradley is anxious to make his peace, have allowed full weight to the old classification, though they have refrained from emphasising the implication of a subject which it contains. Mr. Bradley alone would sweep away both entirely, believing that what might be called Presentationism will suffice; and for him, it is to be noted, a presentation is supposed to imply no relation to a subject but is "that which is simply and comes as it is".

This position is so little in keeping with Mr. Bradley's general theory of method that one is almost tempted to regard it as a wilful *tour de force*. Thus in one place he says: "The absolute truth in the light of metaphysics, because it will not work, must not be let in". On the other hand, to those who brand a useful assumption as falsehood he replies: "If a fiction, it deals with the facts. Let psychology mind its own business."[1] Why should not this language be used of the conscious subject, which, whether fact or fiction itself, certainly works and enables psychology to know its own business? Nothing would have seemed more natural for Mr. Bradley, with his views of working definitions and useful hypotheses, than to say: 'The conception of a subject, soul or self, that is aware of what is presented, receives what is given, and either seeks or avoids, according as it feels pleased or pained—this universal postulate of common-sense may be a fiction, but it deals with the facts: debar me from its use, and I must talk of psychical processes as I might of fermentation or electrolysis. Whether individual minds are modes of one Infinite Mind; whether their individuality is one of form and has varying real constituents; whether the mind that I am for myself is matter for everybody beside; whether the energy of the physicist is but another aspect of what the psychologist calls will, and the law of least resistance another side of pleasure and pain—whether propositions like these or their opposites are true in the light of absolute metaphysics, is entirely outside empirical psychology. The assumption of a conscious subject as a working conception can be kept clear of such questions just as the conceptions of substance or cause can be kept clear of analogous speculative difficulties. "If we do not define by the organism," *i.e.*, help ourselves out with scraps of physiology, "we must use the word soul or mind;" and if we are to avoid "rags of metaphysics," such as talking of "what is simply and comes as it is," we must define the soul as "a totality of *immediate* experience". And it must be plain to all but "barbarians" that such a continuous

[1] Soberly put, this is very much my own position. I have developed it at more length in an article entitled "A General Analysis of Mind," in *The Journal of Speculative Philosophy* for 1882, pp. 368-370.

identical totality is not a mere sum or series of experiences, *a*, *b*, *c*, *d*; but that, contrariwise, these experiences only become a whole when regarded as the experiences of one to whom pertains whatever activity experience implies.' However, we must take Mr. Bradley as we find him, and he refuses to distinguish psychical facts from others by the characteristic of subjectivity.

Passing from the definition of psychology to psychology itself, Mr. Bradley maintains that the relation of subject and object is not essential. The properly psychological reasons given for this call for special consideration. It is urged, "in the first place, that in verifiable experience we occasionally have states where this relation of subject and object wholly ceases to exist". But the main point is put in the following questions, which Mr. Bradley asks to have fairly met:—"Where experience does give us a reference to self . . . that self has always a content. . . . If this reference exists at the start, what is the content of the subject? Is it likely that experience, at its poor and blurred beginning, does divide itself into two parts with a relation between them; and if so, what fills each part, and what machinery can at once effect this distinction?" (P. 365, *fin.*) An answer to these questions sufficient to rebut Mr. Bradley's main objection is not, I think, difficult, and shall be attempted presently; but, in fact, these questions are only formidable on account of the preposterous misconception, as it appears to me, on which they rest. In defining psychology, Mr. Bradley identified presentation with existence simply: he now identifies existence with mere presentation. Accordingly there is no self or subject except where there is self-consciousness and so long as there is self-consciousness. 'Once upon a time there was Nobody and Nothing; but after several adventures Nobody received sundry interesting presents, and picked out several things, albeit he remained Nobody still. By and by, however, thanks to their strange collisions, there somehow supervened a mirror, and then Nobody managed to distinguish himself, and was Nobody no more.' A philosophic little romance in this style seems to be at the bottom of Mr. Bradley's assumptions. Before answering his questions, therefore, I should have to ask him if he admitted the distinction of (1) self as existing, or, if he prefers it, self as knowing self, and (2) self as known by self; and I should have to ask him again if he admitted that terms such as Presentation, Experience, &c. (which we may symbolise by O), are necessarily relative to something else (which we may symbolise by S). If he denied these distinctions, I should ask him, without them, to make but one of his clauses clear—*viz.*, "Where experience does give us a reference to self". If he allowed them, I think his first point would be sufficiently disposed of by saying that it simply meant:—We are not always self-conscious; "a reference to self" is not an invariable portion of what is given us. Turning to his "main point," I should ask leave to call his attention to a remark I ventured to urge upon his notice

before (No. 45, p. 62), *viz.*, that a machine is not itself a motive power. Then, if he rejected the distinctions just mentioned, I should ask him to explain how he conceives the relation of experience, whether poor or rich, that is no one's experience to the machinery that divides it into somebody and what somebody experiences. If he accepted these distinctions, I should propose to recast the question, which, as it stands, is ambiguous. "What is the content of the subject at the start?" I should take to refer to the psychologist's conception of the subject as *esse reale*, and I should reply: The subject is, at first as always, that which lives, which thinks and feels and acts, which attends to and is pleased or pained by its sensations and movements. The question: By what machinery does experience at the beginning divide itself into two related parts, subjective and objective? would also require emendation. Experience does not divide itself, but is so divided because of the interest of the subject in certain presentations and in certain relations of presentations. If we could imagine a subject incapable of pleasure or pain, but otherwise passing through the same experiences as ourselves and provided with the same machinery of "regularities, redintegration, blending," &c., it is difficult to see how the differentiation of subject-experience and object-experience could ever begin. How it has begun and developed for a subject that feels and that acts under the prompting of feeling is a question Mr. Bradley deals with himself (pp. 368 ff.). Here in the main we agree,[1] except of course that Mr. Bradley thinks he has disencumbered himself of the difference between the *esse reale* and *esse intentionale* of the subject. But where this difference is itself in question, to argue that at the outset there is no subject because "for the soul" there is then no distinction of self and not-self, might be characterised as *Ignoratio Elenchi*, *Contradictio in Adjecto*, or *Petitio Principii*, according to the reader's taste.

In keeping with this rejection of a subject that acts and feels is Mr. Bradley's further doctrine that activity, as well as feeling, is a mere presentation. Wundt's theory of apperception he holds beneath contempt, and the present use of the term "activity" is, he insists, "little better than a scandal and a main obstacle in the path of English psychology". I should have thought the chief obstacle in the way of English psychology had been its neglect of psychical activity, and the chief merit of psychology in Germany had been essentially that very doctrine of apperception which, as developed by Wundt, Mr. Bradley is loath to criticise. He demands a definition of activity, and offers one of his own. For my part, I doubt if activity can be defined in terms that do not already imply it. Mr. Bradley's definition (p. 371 *fin.*) is so far from clear to me that I am driven to suspect some

[1] Cp. *Ency. Brit.*, art. "Psychology," pp. 84 ff.

clerical error. What we mean generally when we use 'activity' is, he thinks, "an alteration of A not taken as belonging to anything outside, but as a change of something beyond A which realises something which in A was ideal." From this "general idea" of activity "we come to the soul and the perception of our own activity," and naturally expect the general idea will now be rendered more definite. But not one word does Mr. Bradley tell us of the *meaning* of psychical activity; there is only the old aimless contention that the soul cannot be conscious of the activity implied in consciousness without some apprehension of a concrete self, &c.; in other words, that psychical life cannot begin with reflection. "The minimum that must be *apprehended*" is "a concrete and limited self-group, and a following alteration of this as against its limit". It must surely be plain to everybody but Mr. Bradley that the apprehension of this minimum is itself an action, and none the less distinct from the said minimum because the act is that of apprehending an act. But Mr. Bradley is evidently equal to the feat of moving the world without a *πού στῶ*: to get into a basket and carry himself would be nothing to a philosopher who resolves himself into his own presentations. If Mr. Bradley had made clear to us what we are to understand by "apprehended" in the passage quoted, he would have done more to remove the scandal of which he complains. If he were now seriously to attempt this, he might find the obstacle not so much disgraceful as ultimate and insuperable. Certain differences between one kind of activity and another may be known: we may distinguish, *e.g.*, thinking from moving, recollecting from expecting; so far, that is, as they are differences in presentations or in their interactions. But the common fact in all—which I have called, perhaps miscalled, Attention—cannot be known *per se*; for it is neither a presentation, nor a relation *among* presentations, nor, strictly speaking, an unanalysable element in the presentations themselves. An unanalysable element in every complete state of mind it is, I admit, but one which even in reflective consciousness is not directly presented. I see no very serious objection to saying that all that we know *about* it is an "intellectual construction," or an interpretation, or even an inference, provided it be allowed that every proposition in psychology when completely explicated becomes nonsense if this "inference" is rejected. I allow further not only that it is a most difficult problem for psychology to ascertain how such "intellectual construction" as *a state of mind* has arisen, but also that it is entirely a question for epistemology to determine finally its validity as *knowledge*. But if science is to precede philosophy and to furnish its material, then empirical psychology, in order "to deal with its facts," will have to recognise, and always does recognise, that unanalysable element I mean by attention or psychical activity. It will have also to distinguish, and, in fact, always does distinguish, this attention

from its objects, the presentations attended to. Other terms may be used—thought, sentience, consciousness: this unanalysable activity may be confounded with its object, as was done by the faculty-psychologists with their powers of perception, conception, and what not; but the activity is there all the same.

But if it is unanalysable, why call it activity rather than anything else? asks Mr. Bradley. This question implies that activity has a meaning apart from psychical activity, and such is, as we have seen, Mr. Bradley's opinion. The contrary, I should have thought, was nearer the truth: all terms implying action as distinct from mere happening are commonly regarded as anthropomorphic. That is to say, this unanalysable psychical element is taken as the type and source of all other conceptions of activity: they involve it, it does not involve them. It is quite true, however, that the current conception of activity is derived from the "active process" rather than from the intellectual, and it is in every way reasonable to ask whether there really is activity in both, and a common activity. But I have already dealt with this question (No. 45, pp. 58-61).

Mr. Bradley has still an objection: Suppose your analysis admitted, and that all psychical activity is fundamentally one—attention to presentations; still you have only substituted one faculty for several; "the vice of admitting faculties is there all the same". In the first place this is a serious over-statement: it would be a very real gain to psychology if its facts could be so far simplified, a gain comparable to the simplification in physics obtained by the modern conception of energy. Mr. Bradley might as well cavil with this because it still uses the term force. But further, the vice denounced is not chargeable against the analysis I am defending. It is not proposed to *explain* psychical facts by *assuming* a faculty beyond them. All that is meant is that in every psychical fact there is a subject attending; not that beyond these acts of attending there is a potential attention. The subject is not regarded as merely *capable* of attention and as attending, when it chances to attend, by means of an appropriate faculty; but it only is an actual subject as it actually attends. Mr. Sully and Prof. Wundt can speak for themselves if they think it worth while; but for myself I entirely repudiate Mr. Bradley's account of my views. Nothing so fatuous as confounding an analysis with an explanation is fairly chargeable against me. I might as well accuse Mr. Bradley of mythology because he talks of the laws of Contiguity and Blending as working thus and thus.

In my remarks (No. 45, pp. 66 ff.) on Mr. Bradley's earlier article (in No. 43), I tried to show that the account he gave of the origin of the conception of activity confirmed, in spite of him, the analysis he was seeking to overthrow. Mr. Bradley has modified this account in one important particular, but excuses himself from entering further into my criticisms, because he

looks to his last article (in No. 47) to clear up what he thinks I misunderstood before. That I do not understand Mr. Bradley's analysis I fully admit; but I do not believe I have so completely misunderstood it as to exclude my remarks from all claim to consideration. However, as the point is important, I will try, now that I have compared both articles, to restate the particular objection more clearly. Mr. Bradley is showing how the idea of activity originates. It is brought out of a certain basis by means of a certain machinery. Of this basis it is hard to get a clear account. On p. 365 it is "a whole that expands and contracts, and *feels* pleasure and pain". On p. 367 it is "a whole given without relations ['given' we must remember = 'is simply'] and given *therefore* as one with its own pleasure and pain". On the former page we are told that pleasure and pain are presentations, and on the latter that "presentation has two sides, sensation and pleasure and pain". In the account of the machinery there is a like confusion. After describing the working of association in the "improved" form, Mr. Bradley continues: "Turning now from these conditions to *one not mechanical*, though hardly ideal, we reach the influence of pleasure and pain. That these work seems certain, but the way . . . is still matter of controversy, and I shall pass it by!" Now, it makes all the difference in the world whether pleasure and pain, like intensity, duration, &c., are sides or aspects of every presentation, or pertain only to the whole that expands and contracts and which is said to feel. Further, if pleasure and pain work in a way not mechanical, we ought surely to have some general notion what this way is, especially if they belong to the whole that feels, rather than to the elements that struggle about company, and whose collisions are said to "*cause* pain and unrest" (p. 360). However, in spite of this initial obscurity, Mr. Bradley's exposition will be more lucid as we go on. Certain sensations, which continue to be one with pleasure and pain, become closely united into a "feeling-mass": from this the other groups in which the feeling-aspects have been loosened by repeated collisions become dissociated and contrasted. Supposing the primitive correlated whole resolvable into I and O (inner and outer), we may say then that we have now I + F set over against O − F, the group that has kept its feeling-aspect and the rest that have lost theirs. And now the idea of activity is about to emerge. But let us, to be sure there is no conjuring, note once more: (1) that the only materials are I + F (or some presentations it may contain) and O − F (with, in like manner, its latent differentiations); (2) that these and their constituents are ever struggling towards an independent totality, this striving of every mental element being the only active principle that is even tacitly admitted; and (3) that the laws of its working (coalescence, redintegration, &c.) are the machinery we are expected to understand. It is altogether a singular inventory for a psychologist

whose first fiat was, "Atomism must go wholly," and who feels at liberty to denounce Herbart's "audacious assumptions and complicated fictions". But to proceed. Since I + F and O − F are all the presentations there are, we naturally expect the constituents of activity to be found among them; and so, we are told, they will be if we assume that I + F "is perpetually growing larger or smaller as against other elements [O − F], and . . . that the expansion gives *in general* a feeling of pleasure, while contraction brings pain". Having "assumed all this and passed over the difficulties which of course beset it," we learn next and last that "this expansion of our area beginning from within gives a certain feeling, and it is interpreted as a putting forth of a something from out the self into the not-self—the something being [named] energy or force or will . . . in fact, of course, being nothing at all" (No. 43, p. 320). In his first article Mr. Bradley was of opinion that there must be an idea of the expansion and that "this idea, or end, must lead to the change". But he now thinks this was perhaps going too far: all that seems really necessary is "a concrete and limited self-group, and a following alteration of this as against its limit" (No. 47, p. 372).

Mr. Bradley is fond of metaphors, and sometimes warns us that his terms are not to be strictly taken. Unhappily he has not elucidated what he intends by the expansion of a group of presentations against its limit, or by the seemingly superfluous qualification that the expansion begins from within. The group I + F might increase in intensity; but such an expansion could not be said in general to give or "to be connected with" pleasure, especially if bodily sensations are a main constituent. This group might also increase by means of fusion and redintegration, forming "a whole possessed throughout of such a content that it suggests nothing out of harmony with anything else" (p. 360); and when this does happen, Mr. Bradley has already told us pain and unrest cease. But let the reader think of any such case of simplification, identification, recognition or the like, and say what there is in it—I ought not say to "give" or to "suggest" but—to be a certain feeling possibly interpretable as a putting forth of something from out of the redintegrating group into another. Nay, I would ask him to consider what possible meaning can be given to such "a putting forth" so long as we exclude everything but presentations and their interactions. For my own part I not only fail to understand Mr. Bradley's natural history of the idea of activity except by admitting elements which he most emphatically excludes, but, giving up the attempt to understand it, I cannot even imagine the state of mind to which his description applies—*viz.*, that it is an "expansion" which in general "gives" pleasure, and at the same time "gives" a feeling interpretable as energy, force or will. Pleasurable "expansions" are frequently passive, and "expansions," interpretable as exertions of force or energy against a limit, as frequently painful. Moreover we often

enough have a feeling so interpreted when the self-group contracts instead of expanding. To me Mr. Bradley's exposition in detail reads like an unintentional travesty of Herbartian psychology by one who has tried to improve upon it without being at the pains to master it.

But the objections I urged before are independent of its details and are not removed by the omission of all reference to final cause, to desire, or to the distinction of real and ideal. Much as Mr. Bradley strives to get all his facts into the one plane of presentation, his language continually shows that he has to admit other facts outside that plane. But the consequences of this admission seem to me hidden from him by the ambiguities of the words "feeling" and "given". Perhaps, too, that 'slippery word' relation, as Professor James happily termed it, must bear a good deal of the blame. What is "given" is sometimes what there is for the psychologist, and sometimes what there is presented for the subject whose states of mind the psychologist describes: Mr. Bradley seems never to know which of these two standpoints he is occupying. As to "feeling," a collation of passages would show that with Mr. Bradley as with the rest of mankind pleasure or pain is not anything in itself. Neither is it an attribute of presentation comparable with intensity, duration and quality, or else it would be as much a contradiction to talk of presentations that had lost their feeling-aspect as it would be to talk of presentations that were *minus* intensity, duration or quality. From the whole that feels, however, feeling cannot be separated. So far from being presentations, pleasure and pain are rather the effects of presentations on this self, "brought" or "given" to it by them. This absolute and invariable subjective implication of the word feeling cannot be disposed of by calling feelings presentations, so long as it is true that all other presentations have or attain objective implications, and feeling proper never does. And it is because of this subjective implication of the word that what is interpreted as energy or will Mr. Bradley, as it were instinctively, calls feeling too. This fact also is outside the plane of presentation proper. Everybody would see at once that to refer the origin of the idea of activity to an expansion that was only presented would be almost a contradiction: when the expansion is said to "begin from within and to give a certain feeling, &c.," it is not so evident that only presentation is meant, and that the order of events is first the expansion and then the feeling of effort!

But, as just said, the word "relation" it is, I suspect, which has served Mr. Bradley the worst. A writer who essays to settle the fundamentals of a science like psychology, and in particular to exhibit the analysis and genesis of such a conception as activity, had need be very careful with this word "relation". But it never gives Mr. Bradley a moment's pause. Psychology is concerned only with certain facts, "regarded merely as events which happen," and these facts are presentations or "*relations existing between*"

presentations.[1] Now it seems to me that some reflection might have shown Mr. Bradley that relations are not generally events —that of subject and object is not—and that relations between presentations often do not "exist" (*i.e.*, are not given) till they are made. So far from activity being resolvable into a relation between presentations, it is not possible, I maintain, to explain the psychological relations of presentations except we start from psychical activity. I cannot do better in this connexion than quote a passage Mr. Bradley has himself cited: "In the very lowest stage of psychical existence we can still point to a central activity, and verify there a rudiment of inference. And a soul, so far as we are able to see, would be no soul at all if it had not this centre."[2] "An inference," this same writer elsewhere explains, "cannot wholly come in from without or be passively received." Between inferring and relating, it need hardly be said, there is more than an etymological connexion.

To sum up: In spite of his great astuteness and ability, Mr. Bradley has, it seems to me, involved himself in inconsistency and confusion, because he has not merely forsworn all speculation, but repudiated also the fundamental conceptions from which speculation starts: his procedure is much like bleeding yourself to death to guard against blood-poisoning. A cursory survey of knowledge discloses two limits—what is beyond our reach and what is too near to reach. The nearer limit only affects psychology, and Mr. Bradley, in essaying to treat psychology as a natural science, has ignored this peculiarity: because he can't see his own eyes, he seems to think he must say he hasn't any. He denies activity to mind as a whole, but allows its elements to struggle towards an independent totality. Out of this psychical machinery he tries to develop its own presuppositions, and smuggles into it what is really distinct from it and is its only motive-power. The plausibility and the hopelessness of such a task suggests a certain parallel to the old dreams of perpetual motion.

[1] Mr. Bradley, supposing me to have said that activity contains a relation, invites me to say, further, whether the terms of the relation are presentations; or, if not that, what else they are—as if no other possibility were conceivable. All I meant was that an act of attention may be simple and original, albeit the conception of it is composite and derivative, not possible till we have first acquired the ideas of a self and a not-self, and got to know that changes in the latter ensue upon modes of the former —a point irrelevant enough to the main question, on which Mr. Bradley keeps insisting still.

[2] *Principles of Logic*, § 3, p. 456.

ON FEELING AS INDIFFERENCE.

By Professor A. Bain.

The question whether we have states of mind properly describable as Feelings and yet neither pleasurable or painful, is at this moment answered in opposite ways by psychologists. Yet very large consequences seem to depend on it; and any hesitation as to the side that we ought to take may mean that we abandon the discussion of some of the vital problems of Psychology. I write the following lines with the hope of eliciting some further discussion on the subject in Mind.

It is not wholly a question of definition. There is a strong temptation to make it so. In the unavoidable vagueness of subjective phenomena, it is a great relief to have a few cases of unmistakable preciseness; and among them we may note the distinction of pleasure and pain. Although these are ultimate facts, and cannot be defined by analysis, they are not the less decisively marked out in our consciousness; they are never confounded either with each other, or with states that are neither. Hence a generic name that comprehends those two states as its species is a well-defined genus. To treat Feelings as made up of Pleasures and Pains is to leave no doubt or uncertainty as to what we mean by the word. We seem to have got triumphantly over a difficulty of no small amount. After 'Consciousness,' the word 'Feeling' is one of the serious troubles of psychological definition.

This solution, in spite of its advantages, is not universally accepted. For example, Reid divides feelings into the agreeable, the disagreeable and the *indifferent*, and considers the last-named class to be the most numerous. He exemplifies them by referring to those of our sensations that serve no end but to mark difference, as in distinguishing one human voice from another.

Now it will probably be allowed that these states are very often quite indifferent as regards pleasure and pain. This, however, is not decisive. Considering their exclusively intellectual significance, we might refuse to class them with pleasures and pains under the genus Feeling, and might insist on placing them entirely in the sphere of the Intellect. We might call them intellectual sensations or sense-presentations, and regard them as the antithesis of Feeling and as not proper to be included in the region of mind so denominated.

In fact Reid omitted the case that gives strength to his position; that is to say, he left entirely out of account the fact familiarly known as Excitement, upon the exact import and bearing of which the question finally rests. None of Reid's instances would fall under this designation; while it covers

modes of mind that may have the smallest possible intellectual value, so that there would be a want of propriety in attaching it to the domain of intelligence.

It is, however, questioned by many "whether any feeling as such can be indifferent" (Sully). To this I would say that I can agree to regard no feeling as indifferent, in the same way that I can admit that there is no such thing as a perfectly straight line or an exact circle. I would not affirm absolutely of any mode of consciousness, call it feeling or anything else, that it is wholly devoid of either pleasure or pain in an infinitesimal degree. But psychology, like law, refuses to deal with minima or infinitesimals: we must have factors of such an amount as to be a felt influence on our mental doings. In this view I contend for the existence of neutral states in the greatest plenty; not merely Reid's comparatively tranquil intellectual sensations, but outbursts of voluminous emotion that agitate and engross the whole man as only feelings strictly so called can do. Nevertheless, in order to do full justice to the proofs of this position, I must make an important admission as to the frequently mixed character of states of excitement.

My meaning is this. When we are what we call excited, it very often happens that we have a certain amount of either pleasurable or painful consciousness, or we may be passing rapidly from one to the other. But here is the point. Is the degree of conscious pleasure or pain necessarily and always equal to the degree of the excitement? To this I think the answer must be in the negative. Our power of introspective discrimination and mensuration is quite adequate to prove to us that the pleasure or pain is one thing and the mental agitation or excitement another thing: the two do not rise or fall together.

A contrasting illustration will be of service here. Take a few smarting pains—such as the sharpening of a saw, the pricking of the skin, the odour of assafœtida, the taste of salts and senna, a scald with boiling water. In those cases we are undoubtedly excited. But excitement is not the word we use; we prefer the term 'pain,' pure and simple. The entire consciousness is pain and nothing but pain: as is the excitement, so is the pain; the coupled facts, which are usually present and distinguishable in consciousness, are here one fact; the two modes are coincident; the excitement does not overlap the pain. All this of course is most strictly applicable to the first moments in each case.

Now, instead of such pains as the sharpening of a saw or the squealing of parrots, let us take a voluminous noise, say the discharge of a heavy gun, the rattle of thunder, the din of a London street, the noise of a mill-flat. These effects are rousing or exciting: they are not necessarily painful, although apt to be so. In certain states of the nerves, they may even give pleasure for a time. Yet the excitement is the main fact; the pain or the pleasure is but a chance incident. The state is one of mental

disturbance, agitation, conscious intensity; its opposite is quiescence or calmness. It seizes possession of the consciousness; excludes rival claims to notice; governs the thoughts and, through them, the actions. All this happens without taking into account either pain or pleasure, which may or may not be a controlling factor.

Take, again, the excitement that prevents sleep. This, by the very fact, is a formidable mode of consciousness. There may be a mixture of pleasure or pain, but certainly not co-extensive with the mental disturbance. If it were pleasurable in the whole extent of the awakened consciousness, we should not wish to part with it; if it were painful in its whole extent, like the instances of acute pain formerly given, we should use in describing it language very different from what usually contents us.

These two examples are as good as a number: the same terms are equally applicable to the generality of instances of what we understand by excitement. It is the absence of reference to so important a region of our mental life that makes Reid's elucidation of indifferent feelings radically defective. Even without the class of cases that he fastens upon, it is strictly true that the Indifferent modes of feeling, including the indifferent element in mixed feelings, far outnumber and outmeasure the pleasurable and the painful in everybody's life. In saying this I am willing to discount not merely the intellectual sensations, but the peculiar species of indifference under the attitude of pursuit, when we are so engrossed with action as to be scarcely conscious at all, in the full sense of consciousness, as feeling. Intense objectivity of regards, as in a race or an engrossing operation, is not, strictly speaking, unconsciousness, but it is the maximum of energy with the minimum of consciousness. It might be treated as a mode of indifference, but it has a character of its own, and is better kept distinct from feeling as excitement. It readily becomes excitement; but whenever the objective tension is remitted, we relapse into subjectivity, and the consciousness is then sufficiently intense and may be called excitement in the true meaning, while liable to be at the same time pleasurable or painful, under the qualification already given.

I have always contended for the continuity of neutral excitement and feeling (in Reid's view) as discriminative sensation. This I consider necessary to complete the characters of neutral or indifferent feeling, and also to constitute the transition between Feeling and Intellect. I do not dwell on this topic at present, but content myself with noticing the serious inadvertence of regarding the genus 'Feeling' as made up exclusively of pleasure and pain. It would be an immense advantage to coin a word that included this all-important couple and excluded everything else. But to apply the word 'Feeling' to this purpose is to carry on an unequal fight with inveterate use. It is not even as if that word were commonly limited to the trio of pleasure and pain and excitement

that is neither: force has to be brought to bear upon popular usage to impose even so much limitation.

The inclusion of the neutral modes, along with pleasure and pain, in the one genus 'Feeling,' must be logically justified on the ground of the importance of the points of community of the three species. Having implicitly handled these in the previous discussion, I need not dwell further upon them now.

WHY DO WE REMEMBER FORWARDS AND NOT BACKWARDS?

By F. H. Bradley.

To the reader who is new to this question it may wear the appearance of a paradox. He may reply that to go forwards is obvious and natural. But if I ask why should my memory go only one way, why should memory move never from the present to the past—he may find that what seemed obvious seems now merely false. Still, if he attends to the subject and confines himself to bare memory, if he discounts, that is, the cases where we reach the cause from the effect, or in general reconstruct a whole from its interdependent parts, he is likely to admit the existence of the problem. And he may accept the conclusion that the reproduction of a series has but one possible direction, from the earlier to the later. Whether with Prof. Bain he will add this tendency to a long list of "ultimates" (Mind No. 44, p. 469), or will try to find some explanation, I cannot foretell. For myself, though I of course accept the fact of this general tendency, I am not sure that it has no exceptions. I do not believe in the *impossibility* of remembering backwards, and even doubt if sometimes that does not happen in fact. And, so far am I from accepting our habit as an ultimate, that I venture to find no difficulty in seeing how it was acquired, or at all events may have been so.

I ought perhaps to begin by attempting to explain how it is possible to reproduce a time-series at all. This would be a far more serious task, and I cannot here undertake it. And so the question must be simply as to the direction of the recall. Yes, a reader may suggest, the problem is, Why, when time itself goes forward, memory is tied also to that direction. But this is not the way to put the question, and we must begin by purging ourselves of such ideas about time. The stream of events does not really run from the past into the future, and it is easy to see that this flow is our own construction. We find, on reflection, that we really do not perceive the future and the events past and present streaming onwards and into it. What we think we see, upon reflection, is a succession of events, in which what we call the present constantly, in part at least, becomes new, and in part slips away backward into what we call the past. And this con-

struction, by which time flows backward in a stream, bringing new things from the future, and carrying old things to the past, is more natural than the former one (Lotze, *Metaph.*, §§ 138 ff.). Indeed the reader at this point may define the problem thus—Why, since events go backward always, does our memory of them always takes the other direction?

But further reflection shows us that this question still has failed to see the point to be explained. In speaking of a stream of time, we forget that a mere stream, if regarded by itself, cannot have a direction. It does not flow towards one point rather than another, or indeed towards any point at all. And hence, until we have more than a mere stream, until a qualitative point is taken as an end, there can be no meaning in direction. Again, a stream, if it is to be a real stream, must possess an identity of what flows. If we did not have the same water in different positions, if we had always other waters, then to speak of a stream would be to use words without a meaning. We must try to apprehend more clearly what is implied by such a phrase as a current of events; and let us help ourselves with the following scheme: $- abc - acd - ade - aef - afg -$.

In this we may regard a as being constantly increased or continually diminished. We may look on the original position of a, with its earliest possessions, as receding backwards with each change, or, on the other hand, as going forward and as gaining constantly. And the difference comes from the way in which the new is considered as standing to the old in the different cases. But again, if we please, a may be stationary, and the stream may flow past it, as—$bc - cd - de - ef - fg -$. What then is the direction of the current? It may be running for ever into an ideal reservoir, say on the left hand beyond bc, or going forward continually to a point on the right hand beyond fg. Thus, if the stationary a be one of the Egyptian pyramids, it may seem grounded and left behind, while events have flowed forward, or the survivor of a tide which has swept all else back into oblivion. And, since all motion is relative, the stationary (we must remember) seems in certain conditions to take on an opposite movement.

But, I fear, the reader has had enough of these formal reflections. It is not a stream in general which we have to do with, but the stream of *our* events. And here we have the essence. It is our psychical states which furnish both the flood and all the matter which flows or which stands against the stream. In the succession of these states it is the group of self, more or less unvarying, that has the place taken by a in our scheme. And it is the attitude of this group towards the incoming new presentations on which everything turns. It is this relation which gives a meaning to *direction*, and shows the essence of our problem. Why is it natural for us to look upon Time as running forward? It is because *we* go forward with it, marching willingly to our

increase or dragged captive to our decay, but in either case going to meet fresh experiences. Or why does Time run backward from the future? Because *we* do *not* go back, but still hold our own against change, and force the incoming to minister to our constant identity. And Time goes backward once more when our life slips backward with it, when what we are appears a stone that marks the growing space beyond which our self for ever recedes from us upon the ebb. But again we may be stationary through some blessed hour, anchored in some quiet backwater, a still eddy beside the torrent of things, out of the world,—so we feel it. Here, if events hurry forward to the future, or are whirled backward into the abyss, it is all one to us, since we ourselves *are*. But we are stationary once more, when all we have fails to interest and when the new seems merely old. It all (we feel) makes no real difference, is all the same thing over again; *we* do not move; and, if events go forward still as they did before, or if, on the other hand, it is nothing new that is coming from the future—is a question that is indifferent. Time has here again hardly a direction.

Let us turn now to our problem about the order of reproduction. We have seen that the direction of mere Time does not help us even to ask the question rightly. And we can see now better how to ask it. Why is our memory directed towards our incoming sensations, and towards the side from which change comes? It is so (we may say, in the first place), because our thoughts in general naturally take this road. And why they take it appears to me almost obvious. The answer, in a word, is practical necessity. Life being a process of decay and of continual repair and a struggle throughout against dangers, our thoughts, if we are to live, must mainly go the way of anticipation. This, when we attend to it, seems quite evident and a mere commonplace. In a creature placed low down in the psychical scale no such thing as memory can even exist. And, though to say that its thoughts are occupied with the future would be barbarous psychologically, still the ideal qualifications of its sensations correspond in the main to future changes of its state by approaching sensation and action. And, if this were not so in the main, of course the creature would be destroyed. And hence, when after a long time memory is developed, it naturally takes the habitual mental direction. We are like a boat anchored on a tide, a boat that ceaselessly decays, and that, to maintain itself, must gather material from what comes floating down; and not only this, for there sweep down impending masses which threaten it. Now if, in order to gather material and to ward off destruction, we turned habitually towards the wrong end of our vessel, how, if such a thing were possible, could it fail to make an end of us. And then, when after a time we get strength to rest, and to recall some great benefit secured or great danger avoided, what is more natural than that still our thought

fronts the same way, and, fixing an ideal point behind, goes on forward to meet again past experiences face to face. We have no practical interest in the mere course of events, and merely to drift with it can be nothing to us practically, even in imagination. We are concerned practically with what meets us and what we go to meet, and this practical concern has formed the main habit of our thought. This, I think, is the real solution of our problem.

And we must remember also that a backward direction in thought is the road away from our present selves. These present selves interest us most, and in the main we tend to see the past in its relation to them, and so to take the path forwards from the past that brings us home to them. But if we felt that our selves were lying in the past, we should so far tend to go back. Thus in old age or under abnormal conditions, where the present interests us little, we are said to live in the past. But here recurrent natural wants must still keep up in the main the acquired habit of our minds.

Our thoughts seem really to go back when the exclusive object of interest is placed far behind us, and we retrace towards it every unwilling advance that has carried us away. Each event adds a link, but our mind moves from each later link back to the earlier; we are interested in each solely as a thing to be passed by, in the order which carries our thoughts home. And, I apprehend, memory may here travel back from the later to the former, because for our interest the earliest is the end. Thus, when we steam against the sea from our native shore, if we thought of ourselves we should go forward against the waves. But as our hearts are left behind, we follow each wave that sweeps backwards and seems to lengthen the interval. And, in remembering objects passed by upon the waters, I think, contrary to our main habit, our memory might take the road that leads to our desire. But nature here, not less than elsewhere, soon effects a change in the course of our thought.

V.—CRITICAL NOTICES.

Elements of Physiological Psychology. A Treatise of the Activities and Nature of the Mind from the Physical and Experimental Point of View. By GEORGE T. LADD, Professor of Philosophy in Yale University. London: Longmans, Green & Co. (New York: Charles Scribner's Sons), 1887. Pp. v., 696.

Such a book as Prof. Ladd here sends over from America has been wanted in English ever since Prof. Wundt showed its possibility in 1874. The *Physiologische Psychologie* has been translated into French and Russian, and an English version, more especially of the third edition now in press, would be very welcome. An original book has however the more vitality, and there was great need of a work simpler and less technical than Prof. Wundt's. Prof. Ladd deserves warm thanks for undertaking the preparation of such a work. His careful and able book will prove most useful to all who take interest in the results and prospects of physiological psychology.

Prof. Ladd, after a brief introduction (pp. 14), treats his subject in three parts named respectively "The Nervous Mechanism" (pp. 219), "Correlations of the Nervous Mechanism and the Mind" (pp. 343) and "The Nature of the Mind" (pp. 103). The second of these sections is without doubt the most important. It is possible to question the necessity or even advantage of an introduction on the nervous system. There is need of an English work on the physiology of the nervous centres and sense-organs, as thorough as that contained in Hermann's *Handbuch der Physiologie;* but Prof. Ladd cannot of course attempt this in the limits to which he is confined. It is equally impossible to start from the beginning and teach in the first section all the science needed to understand the rest: the student must be supposed to have some acquaintance with physics and biology, knowledge best gained in the laboratory and dissecting-room. Neither an exhaustive treatise on the nervous system nor a science primer is in place. Introductions such as Prof. Wundt and Prof. Ladd give are useful only in proportion to the extent to which they clear the ground for, and lead up to, the facts and theories with which the work is concerned. From this point of view Prof. Ladd's treatment does not seem altogether successful. For example, the rate of transmission of the impulse along the nerve is discussed at length: this is only of interest to the psychologist, however, in so far as it enables us to analyse reaction-times and determine the time taken up by mental processes, and no such application is made. The anatomy of the semicircular canals is only important to the student of mind in so far as these organs are brought into con-

nexion with consciousness; but no mention is made of sensations of equilibrium, motion and dizziness with which they are supposed to be concerned. Prof. Ladd is known to us as the translator of Lotze's *Dictate*, and Lotze was one of the first, in Wagner's *Handwörterbuch der Physiologie*, 1843, to take a stand against the then prevalent vitalism and attempt to subject living tissues to the laws of matter in motion. This mechanical theory of life is now generally accepted, and it is no wonder that Prof. Ladd emphasises it both in the name of the section, "The Nervous Mechanism," and in his treatment of the subject. Thus he says (p. 216):

"The aim of physical research with regard to any given system of this kind is, therefore, not accomplished until all the movements of its different parts are explained in the light of a consistent mechanical theory. This general principle of all physical science neither needs nor permits a special exception in the case of the human nerves, organs of sense and brain."

Therefore we cannot be other than surprised when Prof. Ladd afterwards advocates a theory of interaction and causal relations between mind and body in sheer contradiction to a mechanical theory of living tissues, even saying (p. 665):

"For aught we know, it is of the nature of atoms, when they are brought into relations so extraordinary as those which prevail in the nervous system, to behave with reference to each other in a way that is wholly irreducible to any simple formula like that of the conservation and correlation of energy".

Prof. Ladd's account of the nervous system, taken as a separate treatise, is clear and accurate, perhaps the best in our language. It is, however, possible that the 219 pages and 82 illustrations would have been of more service if they had been given to the real subject of the work.

This subject, physiological psychology or psychophysics, is treated in the second part, taking up slightly less than half the book. The first two chapters are on "The Localisation of Cerebral Function," and deal with matters at present in sad confusion. Prof. Ladd's review seems to be on the whole careful and judicious. He perhaps lays too much stress on the results of Prof. Exner, whose manner of illustration, beautiful as it is, is somewhat misleading: the surface of the brain is divided into little areas, which are printed darker as the percentage of cases increases in which the area was diseased in connexion with a particular motor or sensory disturbance; thus, if there were only one case the area would, possibly by mere chance, be quite white or quite black, and seem more positive than the grey obtained from a large number of cases. Prof. Horsley's interesting surgical operations at the Queen's Square Hospital are, perhaps, too recent for mention. Aphasia is treated somewhat briefly considering its importance and the valuable monographs we have on the subject by Kussmaul and others. Prof. Ladd does not seem justified in stating, and in italics (p. 284):

"*Sensibility seems, then, to be the predominating function of the right hemisphere, as motion is of the left*".

The next two chapters treat of "The Quality of Sensations," and here real progress has been made during the past forty years, both in experimental research and in psychological analysis. Prof. Ladd says (p. 306):

"As respects developed experience the *simple* sensation is a necessary fiction of psychophysical science. Consciousness is scarcely more able directly to analyse a presentation of sense into those factors out of which it originated than it is to analyse a drop of water into its component oxygen and hydrogen gases."

But he thinks "scientific analysis" can do what "introspection" cannot. In so far as analysis of the sense-stimulus is meant by scientific analysis we are on ground foreign to psychology. Physical and physiological research may lead us to look for complexity in consciousness where we had not expected it, as in the sound of the human voice, but the fact that the physical stimulus associated with the sensation of white light is more complex than that associated with blue does not make the sensation any the less simple. How far the introspective analysis of consciousness will be able to advance cannot be foretold; we may however be sure that we shall never reach simple and isolated elements out of which consciousness can be constructed. Such a point of view has been the source of much evil to psychology. It either leads, as in Hume, to the practical denial of the unity of consciousness, or, as in Prof. Ladd's book, to the assumption of a mind with a mysterious power of creating unity of consciousness out of sensation-atoms. It is as though Prof. Ladd should analyse abc into $a + b + c$, and then say that as $a + b + c$ does not equal $a \times b \times c$, it must be multiplied by x; or as though he should divide the human body into head, limbs, &c., and say that as these parts when taken separately do not make up the body, they cannot when taken together. It seems necessary to lay stress on this fallacy, as it unfortunately plays a large part in the book.

Prof. Ladd's account of the psychophysical researches into the quality of sensations is, in general, concise and accurate. He begins with smell and taste, thus reversing the usual order of treatment. I cannot agree with Prof. Ladd in thinking that, while it is impossible to classify smells, it is easy to classify tastes. No combination of sweet, sour, bitter and salt will give vanilla or chocolate, nor can the taste of lemon and sugar be analysed into sour + sweet. Sensations of sound are well, but—considering the importance of the researches of Helmholtz, Stumpf and others—somewhat briefly treated. Mr. Gurney's valuable book on *The Power of Sound* is not referred to. Important researches from the laboratory at Leipsic are probably too recent for mention: indeed some of these are only now in press, although the experiments were made so long as three years ago.

(It may be worth mentioning in connexion with sensations of sound that there has just been made for the Leipsic laboratory a tuning-fork vibrating fourteen times per second and giving a distinct note.) Prof. Ladd gives a good account of sensations of light and colour, but is at at times rather brief and does not attempt to decide between rival theories. Lord Rayleigh is not mentioned under either light or sound. There is much need of further research into sensations of light and colour, especially concerning contrast and fusion of sensations. Due prominence is given to sensations of the skin, including the most recent researches of Blix, Goldscheider and Donaldson on the temperature-sense. This too is a field where careful experiment will yield farther important results. Prof. Ladd seems in these chapters to confuse the doctrine of the Specific Energy of the Nerves with the fact that nerves connect special sense-organs and muscles with special brain centres.

Chapter v., on "The Quantity of Sensations," contains an excellent discussion of the elaborate researches of Weber, Fechner and others into the relation between the strength of the stimulus and that of the corresponding sensation. I agree with Prof. Ladd in thinking that the "least observable difference" is not a unit with which sensation can be measured. It might also be added that the value is obtained at the "threshold of sensation," just where Weber's generalisation does not hold. The immense amount of research and theorising devoted to "the psychophysical law" has not been wasted, as it has led to more accurate methods of experiment and clearer thinking; but the positive results seem scant, and may lead us to wonder whether the labour might not have been more wisely distributed.

Chapters vi. and vii., on "The Presentations of Sense," give an excellent account of sensation-circles, binocular vision and many other subjects of importance to the psychologist. I am, however, compelled to criticise Prof. Ladd's account of the formation of perceptions. From the translator of Lotze we might have expected a clearer discussion of local signs and the psychological origin of our idea of space. Prof. Ladd says (p. 416):

> "It is unnecessary to illustrate in further detail *the process by which the mind* with its native synthetic activity and with the help of qualitatively different sensations *constructs its field of touch*" (Italics mine).

But this is just what has been neither explained nor illustrated. Prof. Ladd lays great weight on a distinction between "localisation" and "eccentric projection," seeming almost to think that we have by intuition a knowledge of the shape of our own body, and go on thence to construct other things. We may, however, wonder what "eccentric projection" is when we read (p. 387):

> "The law of eccentric projection is generally stated thus: Objects are perceived in space as situated in a right line off the ends of the nerve-fibres which they irritate".

In places there is confusion amounting almost to contradiction. For example, Prof. Ladd says, and correctly (p. 455):

"Objects of sense [*i.e.*, perceptions] are in no case exact copies of ready-made things which exist *extra-mentally* just as they are afterwards perceived, and which get themselves copied off in the mind by making so-called impressions upon it; they are mental constructions".

But it had previously been said (p. 391):

"It is position and extension in space which constitute the very peculiarity of the objects as *no longer* mere sensations or affections of the mind. As sensations they are neither *out* of ourselves nor possessed of the qualities indicated by the word *spread-out*. As objects of sense [*i.e.*, perceptions] they are both out and 'spread-out'."

Chapter viii. gives a tolerably complete summary of experiments which have been made on the "Time-relations of Mental Phenomena". Prof. Ladd does not often venture to criticise, and in several cases praises work of doubtful value. It is said (p. 497), and very truly, "Experimental research does not explain the origin or nature of our idea of time and its relations". Research in the field of psychometry has, however, been tolerably successful, and has yielded results not without importance. It is interesting simply to know that the time it takes to perceive, to will, to remember, &c., can be determined, and that this time is constant for the same individual and under the same circumstances, but is a function of race, age, occupation, &c. The fact that changes in the brain and changes in consciousness correspond in time throws light on the relations between the two. Further, psychometric research helps us in analysing perceptions and in studying attention, volition, &c.

Chapter ix., on "Feelings and Motions" [Movement? Emotion?], was evidently written with extensive knowledge of the German and English literature concerned with the subject. It is, however, a pity that use could not have been made of Mr. Ward's important article in the *Encyclopædia Britannica*, with its clear definitions and treatment of feeling, attention, &c. Prof. Ladd says (p. 344):

"Sensations of motion, of innervation and weariness of the muscles, the so-called 'common sensations' (or sensations of the *sensus communis*), the sensations of pain or pleasure and those delicate shadings of sensations, as it were, which constitute the 'local colouring' of all the feelings to which we assign a definite place in the fields of sight and touch, are all closely allied to sensations of pressure and temperature".

Prof. Ladd also speaks of "feeling with its colour-tone of pain or pleasure" and of an "involuntary act of will". Yet, in spite of considerable confusion, the chapter is not wanting in interest and value. The "feeling of effort" is treated in this chapter apparently owing to an ambiguous use of the word "feeling". In the battle now waging over the sense of effort, Prof. Ladd sides

with Prof. James, holding it to be a complex of afferent sensations.

The next chapter treats of the "Physical Basis of the Higher Faculties". At the beginning an excellent account is given of how physiological psychology should unite physical and mental science. The chapter is largely occupied with memory, but no mention is made of the experiments of Ebbinghaus and others. Prof. Ladd holds that the inertia of the nervous system furnishes, "in part, the necessary conditions of conscious acts of memory," but thinks judgment, reasoning, &c., can have no physical concomitants. Thus he says (p. 545):

"From its very nature that marvellous verifying *actus* of mind in which it recognises itself as the subject of its own states, and also recognises the states as its own, can have no analogous or corresponding material substratum".

The eleventh and last chapter of this section is on "Certain Statical Relations of the Body and Mental Phenomena," and treats of age, sex and temperament. It is not easy to draw a sharp line between physiological psychology, on the one hand, and anthropology, sociology and philology, what the Germans call "Völkerpsychologie," on the other. Mr. Galton's name is not mentioned in the book, nor does it touch work such as that associated with the names of Steinthal and Lazarus. It must have been difficult to prepare a book on physiological psychology without making mention (beyond a brief account of aphasia from the physiological side) of language. Abnormal states of consciousness are expressly excluded. This was perhaps necessary, owing to the limits of the work; but it is none the less a pity, as disturbances of consciousness are of the utmost interest to the psychologist, both in themselves and owing to the light they throw on the normal workings of the mind. Prof. Ladd classes sleep and dreaming, in which a third of healthy life is passed, under abnormal states of consciousness.

In concluding this section, Prof. Ladd gives "five great groups of correlations between body and mind". Proposition (4) must, however, be given a somewhat forced interpretation, in order to bring it into harmony with views expressed elsewhere in the book. The propositions are:

"(1) The quality and intensity of the sense-element in our experience is correlated with the condition of the nervous system as acted on by its appropriate stimuli. (2) The combination of our conscious experiences is correlated with the combination of the impressions made upon the nervous system. (3) Those phenomena of consciousness, which we designate as 'memory' and 'recollection,' are correlated with the molecular constitution and tendencies of the elements of the nervous system. (4) The course of thought, and all the higher forms of self-conscious experience, are correlated with the condition of the nervous centres. (5) The statical condition of the body and the general tone or colouring of conscious experience are correlated."

This review has reached such length that little more than mention can be made of the third section of the book. I do not altogether regret this, as I should be compelled chiefly to criticise, and, in matters of speculation, criticism is not usually profitable. The subjects of the four chapters are: "The Faculties of the Mind, and its Unity," "The Development of the Mind," "Real Connexion of Brain and Mind" and "The Mind as Real Being". Prof. Ladd argues that mind is "a real unit being," standing in causal relations with the brain. It is not easy to bring such a view into accord with the physical theory of the conservation of energy. Prof. Ladd defines energy as "that which moves or tends to move the elementary atoms, or their aggregations, into molecules and masses"! A superficial reading might find Prof. Ladd's views identical with Lotze's. Lotze, however, saves himself from a materialistic dualism through his monadology. Prof. Ladd concludes his book by leaving the full consideration of "the first and last things of the Mind—its origin and destiny, its mortality or corruptibility," "to Rational Psychology, to Ethics, to Metaphysics and to Theology".

The preparation of a book on physiological psychology, at a time when both physiology and psychology are confused and irregularly advancing, is a task of the utmost difficulty. Such a book cannot but contain matters open to criticism, and these it is the duty of the reviewer to notice. In the present case, however, it is equally a duty to give the sincere praise which the book deserves. We are not only under great obligation to Prof. Ladd for his care and labour, but owe hearty recognition to the mastery and ability which have enabled him to prepare a work of real value and importance.

J. McK. CATTELL.

The Principles of Morals (Introductory Chapters). By JOHN MATTHIAS WILSON, B.D., late President of Corpus Christi College and Whyte's Professor of Moral Philosophy in the University of Oxford, and THOMAS FOWLER, D.D., President of Corpus Christi College and Wykeham Professor of Logic in the University of Oxford, &c. Oxford: Clarendon Press, 1886. Pp. vii, 133.

The Principles of Morals. Part II. (Being the Body of the Work). By THOMAS FOWLER, D.D., &c. Oxford: Clarendon Press, 1887. Pp. xii., 370.

The first and smaller of these two volumes represents the portion of the work which was completed before the death of Prof. Wilson. For the second Prof. Fowler is alone responsible, though considerable portions of it (which are exactly indicated) are "either based on written or oral communications" received from Prof. Wilson, "or were jointly composed" by the two authors. The first volume is mainly historical, though it begins with chapters

on "The Relation of Morals to other Sciences," and ends with a chapter on "The Method of Morals"; the second is mainly constructive. Though the two volumes are intended to be parts of the same work, the preliminary volume possesses a certain completeness in itself, and it is likely to be found by many students in moral philosophy a useful introduction to the subject. A good sketch of the history of moral philosophy in England had long been a desideratum; and, in spite of the publication of Prof. Sidgwick's admirable *Outlines*, the present vol. i. is likely to be preferred by many beginners in moral philosophy and others who might be repelled by Prof. Sidgwick's closely packed summary and closely reasoned criticism. The great merit of the Oxford Professors' book is that it as far as possible lets the writers tell their own tale. Their opinions are given in extracts from their works. The task of selection is as a rule skilfully performed. Salient passages are quoted, which give the substance of the writers' teaching in the fewest possible sentences. I cannot but think, however, that occasionally the really characteristic feature of a moral system is somewhat missed. It is strange that students of Hutcheson should have found it possible to write even eight octavo pages upon him without noticing the prominence given in his works to the æsthetic aspect of Morality. That the account of Butler should be somewhat unsatisfactory is less surprising; since writers of the most different schools have agreed to persist in the uncritical attempt to construct a harmonious system out of works composed at different dates and representing markedly different philosophical standpoints. Complaint is made that "the various places in which Butler delineates the constitution of human nature are by no means consistent with each other" (i. 52). I am not prepared to say that the charge of inconsistency should have been withdrawn even if attention had been confined to the *Sermons*. As it is, quotation is made indifferently from the *Sermons* (1726) and from the *Dissertation on Virtue* (1736), which was evidently intended (though there is no explicit recantation) to modify the ethical position of the *Sermons* in accordance with the altered moral standpoint presupposed in the *Analogy*, to which it was appended. To attempt to construct a harmonious ethical system out of the two treatises is almost as desperate an undertaking as to attempt to construct a description of the Platonic State partly out of the *Republic* and partly out of the *Laws*. Again, it is said: "In the speculations of Butler we find no mention of any external standard or criterion" (i. 56). I do not deny that Butler fails adequately to explain the relation between his internal standard Conscience and the external standard Utility; but such an unqualified statement as the above is hardly justified in reference to a writer who tells us that "leaving out the particular nature of creatures and the particular circumstances in which they are placed, benevolence seems in the strictest sense to include in it all that is good and worthy, all that

is good which we have any distinct particular notion of" (*Sermon* xii.). Accounts of Butler's moral system are too frequently based upon the first three *Sermons* and the *Dissertation*. The over-disparagement of Butler is the more remarkable inasmuch as there is no modern writer whose influence is so plainly traceable throughout Prof. Fowler's own work. His treatment of the "resentful feelings," for instance, is thoroughly Butlerian; and there is no better instance of what may be called the latent Utilitarianism of Butler than his sermons on Resentment. So again, Prof. Fowler's distinction between the semi-social and directly social feelings, and his whole view of the nature of moral obligation as "imposed upon us by . . . the *whole nature of man* . . . capable of *reflecting* on its own acts, and, as a consequence of that reflection, capable of passing on them a definitive sentence of approval or disapproval" (ii. 260), are thoroughly Butlerian positions. I should hardly exaggerate if I said that the strongest and most valuable parts of Prof. Fowler's exposition read to me like a restatement of Butler in more modern language and in accordance with the changes necessitated by the now generally accepted views of the gradual development of the moral nature of man. At times also Butler seems to be responsible for some of the more questionable positions of Prof. Fowler's ethics and psychology—*e.g.*, his somewhat inadequate appreciation of the beauty of forgiveness and its moral effect on the offender, and again his denial of the existence of "disinterested malevolence" (ii. 112).

When they come to the constructive part of the work, most readers will probably be struck by the somewhat disproportionate prominence given to mere psychological analysis—the mere classification of "feelings" and description of their growth and development in the race and in the individual. In the first two hundred pages of vol. ii. a series of descriptions and classifications, which has little direct bearing on Ethics, is varied only by somewhat unimportant moral reflections on the use and abuse of the various passions and affections. It need hardly be said that these reflections are throughout characterised by good sense and good feeling; but they are sometimes on the borderland of the obvious; and from a philosophical point of view it may be objected that, since Prof. Fowler's view of the ethical τέλος is not established till the latter part of the volume, the reader does not know from what point of view or by relation to what standard of criticism the moral value of the various feelings is being estimated.

No doubt, Prof. Fowler's justification of the prominence given to this descriptive and historical Psychology would be that it constitutes one long and unanswerable indictment against all Intuitionist or *a priori* views of Ethics. As a matter of fact, however, no Intuitionist of the present day will dispute the position that the moral nature of man has been gradually developed. Development and evolution are as fully recognised in the ethical works of Dr. Martineau and the late Prof. T. H. Green as in those of

Mr. Herbert Spencer and Mr. Leslie Stephen. It is open to Prof. Fowler to contend that the theories of such writers are irreconcilable with the admitted facts of evolution. This, however, he never does. Throughout the greater part of the polemical portions of the work the author seems to me—if I may say so without disrespect—to be simply beating the air. Prof. Fowler never really comes to close quarters with any system which is actually held at the present day by moral philosophers of whom it is necessary to take account. All antagonistic theories are disposed of by such curt remarks as this which we may go back to cite from vol. i. (p. 12):—"Any moral system otherwise constructed"—than on a purely inductive basis—"can have no solid foundation of fact, and necessarily partakes of a metaphysical and transcendental, that is, as we conceive, of a purely fanciful character". Here the two professors appear hardly to recognise that those who conceive of Moral Philosophy as a branch of Metaphysics would admit as fully as they do that "the means at our disposal for the study of moral science consist in a knowledge of the *results* of those sciences which throw light (1) on the nature of the individual organism, that is, on the man himself;[1] (2) on the medium, whether material or social, in which he exists" (p. 11). But these would contend that when we have established by induction the nature of man as he is, there remains the further question, 'What ought he to be?' and that no answer to this question can possibly be given without involving an *a priori* judgment. Induction may prove what is; it cannot prove what ought to be. Between 'is' and 'ought to be' there is a gulf fixed which no possible accumulation of experience can possibly bridge over. The 'content' of the Moral Law may be established by induction, but not its 'form'. I may find out by Induction what courses of action fall within my conception of 'rightness,' but how can the idea of 'rightness' itself be found in experience? If we take as our ethical criterion the 'greatest-happiness principle,' we may find out by induction what courses of action will tend to produce happiness, but it is impossible to proceed to the judgment: 'Actions which conduce to happiness ought to be done' without the assumption 'Happiness *ought* to be promoted'. When Prof. Fowler does at length come to face the question of the nature of Moral Obligation, an attempt is made to get rid of this imperious and ever-intruding 'ought':—"The obligation to do what is right . . . . is imposed upon us by our *moral nature*, by which I mean the whole nature of man, sympathetic as well as self-regarding, rational as well as emotional, capable of reflecting on its own acts, and, as a consequence of that reflection, capable of passing definitive sentence of approval or disapproval" (ii. 260). In a note upon the

[1] The metaphysical moralist would of course object to the identification of the "man himself" with his "organism". Perhaps Prof. Fowler himself would hardly, on reflection, defend the concentrated materialism involved in this expression.

same page we read: "It will be plain, from what I have said in this and the preceding chapters, that I do not agree with Prof. Sidgwick (*Methods of Ethics*, bk. i., c. 3) in regarding the idea connoted by these terms (*i.e.*, 'ought' and 'duty') as ultimate and unanalysable". I cannot but feel that in this last statement Prof. Fowler is making a somewhat large demand upon the sagacity of his readers. To my own mind it would have been by no means plain that he had even intended to analyse the 'ought' into something else. The passage in the text might well have been written by Dr. Martineau; it might have been subscribed to (though he would have expressed himself differently) by Prof. T. H. Green. For the 'analysis' of the 'ought' is merely apparent; it has been made to disappear only by the use of words which imply it. To say that an "obligation is imposed upon us" is only another way of saying 'we are obliged'. And what is to "pass a sentence of approval" upon an action but to say that it *ought* to be done?

I am aware, of course, that Prof. Fowler would not regard these objections as unanswerable. He would urge, for instance, that, in his view, moral obligation flows from the "particular nature" of man, while the Idealist regards it as flowing from the "eternal and necessary relations of things". Fully to examine the validity of this distinction would occupy more space than I have at my disposal. I can only point out the consequences of a logical acceptance of Prof. Fowler's position (p. 261) that "the majesty of the moral law, if that be regarded as the source of moral obligation, implies, on our part, a recognition of that law, a reverence for it, and a willingness to conform our actions to its requirements". Does Prof. Fowler mean to say that the obligation or "majesty" of the moral law disappears when we are unwilling to recognise it? Or if the obligation is made to consist wholly in the penalties annexed to its non-performance, does he not fall at once into that pure Hedonism against which, alike in its theological and its untheological forms, he elsewhere vigorously protests?

For the rest, I gladly acknowledge that Prof. Fowler has made some real contributions towards a reconciliation of conflicting theories—towards what I may call the moralisation of the aggressive Utilitarianism of Bentham and his disciples. Except where he catches a sight of the red rag of "Metaphysics," or the *a priori*, Prof. Fowler is willing enough to incorporate "intuitional" elements into his teaching, though when he does so he shows an almost amusing eagerness to make his apologies to those whom he regards as his philosophical forefathers. "The sympathetic affections" are declared to be "coeval with the human race, or, at all events, with the time when man first deserved to be called by his present name" (ii. 75). On the question whether the altruistic affections were gradually evolved out of the egoistic, Prof. Fowler suspends his judgment, and enters a protest against what he calls "specu-

lative psychology". Nothing is more commendable in a philosopher than the courage, in the face of the opposing dogmatisms of materialistic and metaphysical theories of the universe, to admit that there are some things which we do not know, though in this instance the courage displayed in the text is tempered by a somewhat unnecessary apology to Mr. Herbert Spencer in a note. The only point in which Prof. Fowler's treatment of this subject seems to me to be less satisfactory than could be wished, is that there runs through his treatment a tacit assumption that all impulses to action, whether in man or beast, must be either egoistic, altruistic or a mixture of the two. No difference seems to be recognised between an animal instinct and a self-conscious desire. I may add that in the earlier portion of the work the word 'desire' seems to be almost studiously avoided. Instincts, emotions, desires, and perhaps other psychical activities, are all described as "feelings". But, perhaps, the distinction which I desiderate would be brushed aside by Prof. Fowler as "metaphysical". When we come to the fundamental question of the nature of "good" and its relation to pleasure, Prof. Fowler declares for differences of quality or kind, as distinct from mere differences of quantity. At times, indeed, he does not seem to exhibit very clearly the distinction between a quantitative and a qualitative difference. Thus, on p. 164, higher good seems to be almost identified with greater pleasure in the future; and on p. 266 the superiority of the higher pleasures seems to be made to depend mainly or entirely upon its greater permanence. There can be no doubt, however, on which side of the controversy he really means to declare himself. Indeed, it is not altogether clear that, in Prof. Fowler's conception, the term "good" is identified with "pleasure," even of the highest possible order. "The good of man . . . as a whole," he tells us, "may be conceived of as the development of the various parts of his nature in harmony with one another, and with the social and material medium in which he exists" (p. 264). Elsewhere we are told that the good of any part of an organic being is "the satisfaction or development of that part, and the good of the whole the development of its entire nature, or the attainment of that end or those ends for which it is naturally fitted" (p. 263). In such definitions not merely the word but the idea of pleasure seems to be altogether eliminated; except, indeed, in so far as it may be covered by the use of the term "satisfaction"; but if by "satisfaction" is meant "pleasure," it is difficult to see how a "part" of an organic being can be said to feel pleasure. Nor is it possible, without a good many assumptions (Aristotelian or Spencerian) which Prof. Fowler, at all events, makes no attempt to justify, to make the "satisfaction," whether of the part or the whole nature, identical with its "development". Want of space prevents me from pointing out the amount of non-sensationalistic metaphysics which are involved in the identifica-

tion of the good of an organic being with the "end" for which it is naturally fitted. Does the "end" mean the purpose which it is actually capable, as ascertained by experience, of serving? If so, it is difficult to see how any human being can fail to attain his "end," and hence the conception of the "end" of man becomes incapable of serving as a guide to conduct. Does it mean the end which a person or thing *ought* to attain? If so, how can the end be discovered except by the aid of some idea of good which cannot be found in sensible experience? If the end be ascertainable by experience, what factor in experience is it—which among the numerous results of an action is it—which shows whether or not the end of the creature's being has been attained by it? If the resultant pleasure, we go back to the Hedonism out of which Prof. Fowler's half-unconscious Aristotelianism is struggling to emancipate him. If he reply 'pleasure measured by a non-quantitative standard,' what is that standard, and by what faculty is it recognised? This is where Prof. Fowler's treatment of the ethical τέλος—admirable as it is from a practical point of view—leaves us speculatively unsatisfied.

Another point on which Prof. Fowler seems to me to approximate to the position of moralists whom he would perhaps describe as Intuitionists, is in the prominence given to Reason in Morality. It is there that he very emphatically rejects the claim of Reason to supply "the sole spring of action" (p. 279); but he clearly makes the essence—or at least an essential element—of Conscience to be a "judgment" (p. 173). "Man is constituted a moral being by his possession of a nature capable of reflecting on its own acts and, as a consequence of that reflection, capable of passing on them a definitive *sentence* of approval or disapproval" (p. 261). True, he say, that "our ends are always suggested by some passion, appetite, desire or affection, in short, by some emotion". But if it is the "reflection," *i.e.*, the Reason, that stamps them as moral, if it is by the Reason that "the co-ordination of our several desires and feelings, sympathetic, self-regarding, semi-social and resentful, is effected" (p. 283), then Reason is pronounced to be essentially the Moral Faculty. It is true, of course, that before that which the Moral Faculty decrees to be done can be actually performed, there must be a "desire" of some kind—or, as Prof. Fowler calls it, a "moral feeling" in the mind of the agent; but that is fully admitted in substance (though Kant chose to call it an 'interest') by the most thorough-going Rationalists. Whence Reason gets its conception of the standard by which our desires are to be "correlated," of the "ends" by reference to which actions become subjects of "approbation" or "disapprobation," is (as I have tried to show) a question not to be satisfactorily answered without the admission of that "ultimate and analysable idea of right" against which Prof. Fowler so strenuously protests.

I feel that this review has been at once very inadequate and much too polemical. I have been critical rather than appreciative

because (from my own point of view) the importance of the book lies in admissions of whose logical consequence the author seems (if I may so, with all respect) to be not sufficiently aware; and those consequences can only be elicited by a criticism which must at times, I fear, have appeared somewhat more hostile than is usually desirable in a notice of this character. I trust, however, that I have sufficiently indicated that for those who are satisfied with the intellectual positions of "Inductive" Utilitarianism—for those who believe that it is possible to think without consciously or unconsciously falling into "Metaphysics"—the book should be a very welcome contribution to our philosophical literature. It would be impossible for Utilitarianism to be presented in a more amiable, a more conservative—I may add, a more edifying—dress than it wears in Prof. Fowler's pages. What seem to me the defects of the book are no doubt largely accounted for by the conditions under which the volumes have been published—conditions for which Prof. Fowler is in no way responsible. The work was projected, and no doubt largely written, before 1875, that is to say, before the great advance in ethical speculation in this country, to which Prof. Sidgwick,[1] Mr. Leslie Stephen, Prof. John Grote, Prof. T. H. Green and Dr. Martineau have been (from different points of view) the principal contributors. In very many points, advances upon the older Utilitarian doctrine, which have evidently been made quite independently, have been substantially anticipated by some of the writers just mentioned; while the critical or controversial parts of the work often seem to be written rather from the philosophical point of view of 1875 than from that of 1887. It is to be regretted that the book did not appear at a time when it would have possessed an importance as a contribution to the progress of Ethical Science which now it can hardly claim. But it is impossible not to welcome the publication of a work in which some of the most important results of this advance are arrived at by an independent method, and presented in a clear, manly and attractive style. It is probable that Prof. Fowler's interest in Moral Philosophy lies less in its speculative controversies than in the practical principles which will be generally admitted by instructed and thoughtful persons, however much they may be lost sight of in popular Ethics. Of such principles Prof. Fowler is an admirable exponent: his book supplies a good illustration of the practical value of a scientific treatment of Morality and of the large extent to which that value is independent of speculative differences.

H. Rashdall.

[1] *The Methods of Ethics* was published in 1874, but whether or not most of the joint-work of Profs. Fowler and Wilson was written before that time, it is at least fair to say that the position of Prof. Sidgwick is not dealt with in the way which is demanded by the epoch-making character of his book.

The Introduction to Hegel's Philosophy of Fine Art. Translated from the German, with Notes and Prefatory Essay, by BERNARD BOSANQUET, M.A., Late Fellow and Tutor of University College, Oxford. London: Kegan Paul, Trench & Co., 1886. Pp. xxxiii., 175.

Though only a small volume, this is one of the most serviceable contributions that have been made to the interpretation of Hegel in this country. The translation itself is executed, so far as we can judge, with scrupulous care and accuracy; is more readable to those not acquainted with the original than translations usually are; and, it may be added, is in many places more smooth and rhythmical than the original—though that, perhaps, is not much praise. What gives a special value to Mr. Bosanquet's volume is his endeavour "to *interpret* philosophical expressions instead of merely furnishing their technical equivalents". A translator ought primarily to consider those who know nothing of the language translated, but it is a great mistake to assume that his labour is only for them. Many a student of philosophy may know a good deal of German, and may yet be deterred from at once attacking such an author as Hegel in the original, with all the added terrors of black-letter type, bad paper, no index and a very meagre and mysterious table of contents. Even those who have read much German and much Hegel will find help and suggestion in Mr. Bosanquet's manner of rendering and in his very brief notes of explanation. We may take for illustration a passage in which the difficult term '*Bestimmung*' occurs. It is as follows (*Æsth.*, vol. i., p. 26):—

"Was setzt Meyer nun aber, ergeht die weitere Frage, jenem Kunstprincipe Hirt's entgegen, was zieht er vor? Er handelt zunächst nur von dem Princip in den Kunstwerken der Alten, das jedoch die Bestimmung des Schönen überhaupt enthalten muss. Bei dieser Gelegenheit kommt er auf Mengs und auf Winckelmann's Bestimmung des Ideals zu sprechen, und äussert sich dahin, dass er diess Schönheitsgesetz weder verwerfen noch ganz annehmen wolle, dagegen kein Bedenken trage, sich der Meinung eines erleuchteten Kunstrichter's (Göthe's) anzuschliessen, da sie bestimmend sei, und näher das Räthsel zu lösen scheine."

We place the translations of this passage by Mr. Bosanquet and by Mr. Hastie (Edin., 1886) side by side:—

"Then follows the further question—what Meyer opposes to Hirt's artistic principle, *i.e.*, what he himself prefers. He is treating, in the first place, exclusively of the principle shown in the artistic works of the ancients, which principle, however, must include the essential attribute [Footnote '*Bestimmung*'] of beauty. In dealing with this subject, he is led to speak of Mengs [*sic*] and Winckelmann's principle

"But the further question arises, as to what Meyer himself proposes and prefers, in contrast to Hirt's principle of Art. In the main, he treats only of the principle of Art as presented in the works of the ancients, but he treats them as exhibiting the nature of the Beautiful in general. He proceeds to speak of Mengs' and Winckelmann's definition of the Ideal, and expresses himself to the effect that he will

[Footnote '*Bestimmung*'] of the Ideal, and pronounces himself to the effect that he desires neither to reject nor wholly to accept this law of beauty, but, on the other hand, has no hesitation in attaching himself to the opinion of an enlightened judge of art (Goethe), as it is definite [Footnote "*Bestimmend*"], and seems to solve the enigma more precisely." (Bosanquet, pp. 35, 36.)

neither reject nor entirely accept their law of beauty. On the other hand, he says he has no hesitation in adopting the view of a certain enlightened judge of art, as it is definitive and appears to solve the problem more correctly. He refers to Goethe." (Hastie, pp. 29, 30.)

In this passage Hegel, with an awkwardness we have to be prepared for in him, and which was perhaps excusable in Lectures, uses the genitives '*des Schönen*,'[1] and '*des Ideals*,' in different senses after the first and second '*Bestimmung*' respectively. Thus Mr. Hastie's rendering "definition of the Ideal" would convey a wrong notion to the English reader. Hegel evidently means "determination of the Beautiful *as* the Ideal," *i.e.*, 'Ideal' is the *pars definiens*, not the *definiendum*. Apart from this one point, however, Mr. Bosanquet's version seems the more successful of the two (though we must not be understood as ignoring the value to the student of Mr. Hastie's little book with its interesting preface).

Hegel's oft recurring term '*formell*' is not simply represented in Mr. Bosanquet's work by the English equivalent 'formal,' which in many of the contexts would be meaningless or baffling. Thus on p. 3 we have:

"Indeed, if we look at it *formally*—*i.e.*, only considering in what way it exists, not what there is in it—even a silly fancy, such as may pass through a man's head, is *higher* than any product of nature, &c.".

Here the parenthetic clause is an insertion of the translator's, and should perhaps have been expressly marked as such. In this place Mr. Hastie renders "looked at relatively," which conveys *a* meaning, but not exactly all Hegel's meaning. On pp. 58, 80, 91, 125, of Mr. Bosanquet's translation will be found other instances in which '*formell*' is aptly explained by footnotes. The last of these is worth quoting, as it contains a good brief statement of the ambiguity in the term 'Freedom,' which has puzzled many readers of Hegel:

"*Formal* freedom is detachment from everything, or the (apparent) capacity of alternatives; it is opposed to *real* freedom, which is identification of oneself with something that is capable of satisfying one".

On the conception of freedom there is also a good statement in the Prefatory Essay, pp. xxvi., xxvii.

It should be added that Mr. Bosanquet does not profess to understand everything, nor scruples to acknowledge himself puzzled when he finds a difficulty. It has seemed worth while to dwell on these points, because translations of philosophical

[1] Mr. Bosanquet's rendering of this has a slight ambiguity. It must *not* be understood as "the essential attribute, beauty".

books are often executed with little clearness of principle and little consideration of the real needs of those who are likely to use them. Some of the notes explain allusions, and give useful references to Scherer's *History of German Literature*. The only pity is that there are not more references of this kind. Once or twice Mr. Bosanquet quotes Browning in illustration. Might he not have referred to Keats's *Ode on a Grecian Urn*, as explaining better than anything else the significance of Hegel's rather bald and undeveloped remark about the relative *permanence* of the work of art (p. 55 in tr.)? A passage in *Wilhelm Meister*, bk. viii. ch. 5 (near the beginning), would also be in point here. When Hegel refers to Home's *Elements of Criticism* (p. 30 in tr.), the English reader would probably recognise the work more easily under the name of Kames, Henry Home as a Scotch judge taking the title of Lord Kames.

The "Prefatory Essay by the Translator" is entitled "On the true Conception of another World". Any one judging *a priori* might suppose this rather irrelevant to the philosophy of art. A reference to Hegel himself would show its appositeness. It might be regarded as specially a commentary on a passage in the *Æsthetik* (p. 13 in the tr.), as well as on the words from the *Logik* which are quoted as a motto. The writer proposes in this essay "to explain by prominent examples the conception of a spiritual world which is present and actual" (p. xiv.). It might serve as a help to the right understanding of Plato as well as of Hegel.

"The 'things not seen' of Plato or of Hegel are not a double or a projection of the existing world. Plato, indeed, wavered between the two conceptions in a way that should have warned his interpreters of the divergence in his track of thought. But in Hegel, at least, there is no ambiguity. The world of spirits with him is no world of ghosts" (p. xv.).

On p. xx. are some striking remarks about "ideal unity". "An army, *quâ* army, is not a mere fact of sense; for not only does it need mind to perceive it—a heap of sand does that—but it also needs mind to *make* it." The Hegelian conceptions, specially chosen for explanation in what follows, are the "Infinite" (which has been so greviously misrepresented in popular opinions about Hegel), Freedom and Immanent Deity. The 'Extreme Right' among Hegel's professed followers would probably not find the exposition on the last point quite satisfactory to themselves.

The Introduction to the *Æsthetik* is very valuable as, in Mr. Bosanquet's phrase, "almost a microcosm of Hegel's entire system". But it is to be hoped that we shall not have to wait very long before the whole of the *Æsthetik*, or (what might be better) many of the most striking and significant passages are translated into English.[1] There are pieces of brilliant criticism,

[1] There is a translation by Mr. Bryant of the Second and most interesting Part of the *Æsthetik*, that which deals with the three types of Art, the Symbolic, the Classical and the Romantic. This appeared in the *Journal of Speculative Philosophy* (vols. xi.-xiii.), and has been republished (see

e.g., that on Schiller's *Götter Griechenlands* (ii. 106-108), sayings which rise through all the clumsiness of expression into poetry, and passages full of sarcastic humour, like that on the modern sense of the word "Romantic" (ii. 215-217), which Dr. J. H. Stirling has translated in the Preface to his *Secret of Hegel*—things of literary value, apart from their philosophical significance, which it is a pity should not be accessible to the English reader. A mere collection of the references to Goethe in the *Æsthetik* would be of interest. When will someone give us a good treatment of the relation between Goethe's and Hegel's theories of life and of art? It is a promising subject. Then, again, Hegel is at his very best in his Philosophy of Art (as in his Philosophy of History) in his appreciation of the Hellenic genius. A measure of the suggestiveness of Hegel to the art-critic may be found by anyone who will turn to Mr. Pater's beautiful essay on Winckelmann (in his *Renaissance*). On the whole, an acquaintance with the *Æsthetik* and its influence direct and indirect should do a great deal to dispel many of the prejudices against Hegel as a philosopher. He defines the object of the Philosophy of Art as being "to ascertain what beauty in general is, and how it has displayed itself in actual productions, in works of art, without meaning to give rules for guidance". The objection is easily made that "beauty in general" is a profitless subject of inquiry; but let the objector refer to Hegel's own criticism of Plato's *abstract* metaphysics (pp. 40-42 in tr.), and let him pay due attention to the second clause of the above definition. Hegel's perpetual endeavour is to get rid of abstractions and one-sided views, and to see things in their complexity and concrete reality; and this endeavour is perhaps more obviously successful in the *Æsthetik* than anywhere else. Undoubtedly, the work loses much of its interest for us because its illustrations, so far as they concern literature, are naturally enough taken mainly from German authors—though Shakespeare at least is not neglected. Undoubtedly, too, much has become commonplace owing to Hegel's own influence. Again, new questions of controversy have come up since Hegel's day, and the old feud between Classicist and Romanticist has not the same excitement for us that it had for his contemporaries; nor would it be worth the while of every conscientious student to make himself acquainted, *e.g.*, with the extravagances of Fr. v. Schlegel in order to enjoy Hegel's contemptuous criticism. It must be admitted also that Hegel has his own limitations and prejudices, notably in his want of appreciation for Nature, a defect which goes along with his

MIND vi. 149). But the earlier portions have filtered through a French version, and much of the detail, which is just what is characteristic in Hegel, has been, without warning, omitted, although in the later part, which is taken direct from the German, the translator has been so careful as to put asterisks where he has been too prudish to translate *Flöhe* and some other things which Hegel mentions among the *Gemeinheiten des täglichen Lebens!*

Classical sympathies. One would like to know what he would have thought of Turner's landscapes, or of the poetry of Wordsworth and Shelley: one is rather afraid that he would have dealt out only some surly sarcasms. To most people it will seem a defect that he separates the beautiful in the Fine Arts from the beautiful in Nature, and expressly excludes the latter from his Science of Æsthetics; his defence is that only in the case of the Fine Arts does the beautiful admit of clear and definite treatment. The English critic is most likely to urge the preliminary need of a psychological inquiry into the origin and growth of our feelings about the beautiful; and such an account would have the best claim to Baumgarten's term "Æsthetics". A treatise like Mr. Grant Allen's *Physiological Æsthetics*, based expressly on the system of Mr. Herbert Spencer, might seem quite inconsistent with Hegel's, but they may exist very well side by side; for the one begins where the other leaves off. The psychologist is dealing with a question of origin (How do we come to feel or judge this or that beautiful?), and is occupied chiefly with the *materials* which Art has to use; Hegel is chiefly concerned with the ideas which Art endeavours to express, and thus naturally is most occupied with the *highest* phases of artistic development, where such ideas can be most clearly seen; whereas the evolutionary psychologist gives most attention to children and savages, or even the lower animals. There is inconsistency only if the latter denies, as I am afraid Mr. Grant Allen would deny, the legitimacy of Hegel's attempt altogether, as apart from the psychological inquiry. Yet, it is curious to see how well the two methods fit in in most cases; perhaps it implies that, after all, there is a great deal of sound psychology in Hegel. Thus we might compare Hegel's *Æsth.*, pp. 68-71 in tr. (where he shows that the interest of art is distinct (1) from the practical and self-seeking interest of desire, and (2) from the theoretical interest of intellect) with *Physiological Æsthetics*, pp. 33 and 189 ff., whose subject is the same, "*nur mit ein bischen andern Worten*". Again, that Art arises from the need man has to act and express himself is a thesis which will be found in Hegel (pp. 58-60 in tr.) and in *Phys. Æsth.* (pp. 33 and 208). Hegel shows the artistic superiority of Rhine-wine over coffee in *Hermann und Dorothea* (*Æsth.* i., p. 330), and Mr. Grant Allen has an elaborate note on the poetical advantages generally of wine over rum (*Phys. Æsth.*, p. 268). Some people would of course say that this only shows that men may come to the same sensible conclusion whatever their philosophical systems. May it not show a greater affinity than is generally suspected between ways of thinking that are supposed to lie far apart?

D. G. RITCHIE.

La Matière brute et la Matière vivante. Étude sur l'Origine de la Vie et de la Mort. Par J. DELBOEUF, Professeur à l'Université de Liège. Paris: F. Alcan, 1887. Pp. 184.

The extremely suggestive speculations of this last work of Prof. Delboeuf have their foundation partly in the psychological conclusions of his immediately preceding work, *Le Sommeil et les Rêves* (reviewed by Mr. Sully in MIND No. 45), partly in his psychophysical theories. His physical and his psychological ideas find their point of union in the general doctrine stated in the first chapter of the present essay. In opposition to the prevailing "philosophy of men of science" that starts with lifeless atoms and regards life and mind as the result of their combination, the author assumes that life is coeval with the universe, and that the lifeless can only be explained from the living. Inorganic matter and its "fatal" actions are a "residue" of "vital," "intelligent," "free" actions. All the matter of the universe was primitively vital; and "intelligence is the true demiurgus"; for it is by the free action of intelligence that the transformation of living into dead matter is retarded.

We know what it is to be alive, but we do not know what it is to be dead. It is death, therefore, not life, that needs explanation. The explanation is to be sought in a study of the processes of nutrition, generation and birth. From the study of nutrition we may perhaps learn what distinguishes living from not-living matter, and how one is transformed into the other. And the problem of death is bound up with the problems of birth and generation; for death implies birth, though birth does not imply death. That which has had a beginning will not necessarily have an end, but that which has an end must have had a beginning.

In his chemico-physiological study of nutrition, which, as he says, in its positive part merely summarises (but in a very luminous and interesting way) the results of science, the author arrives at the general conclusion that living matter is "relatively unstable," dead matter "relatively stable". "Food" is defined as "a substance which, introduced into the organism, divides itself into two parts: one, more unstable, which is assimilated; the other, more stable, of which a part is deposited, for example, in shells, teguments, the skeleton, &c., and of which the other part is eliminated". The "unstable" part is that which retains most "potential energy". The transformation of "stable" matter into "unstable" that takes place during the assimilation of food is necessary because, during the activity of the organism, forces are constantly becoming "fixed," and with this "fixation of force" goes "the stabilisation of matter". Psychologically, what corresponds to "fixed" force or "stabilised" matter is the definitely organised portion of the mental life, the perceptions that have become memories of the past, the acts of will that have become organised into habit. In the nervous system there is a stable portion that has been already utilised and an unstable portion that is still disposable. The tendency is to greater "stabilisation". Nutrition cannot continue for ever to replace the lost potentialities of change. Thus there arrives a time when the

organism no longer retains the capacity of transforming itself. Its "relative stabilisation" has reached the degree known as "death".

The division into a free or "unstable" and a "mechanical" part on which it depends for its specific and individual characters only appears in the higher organisms. And a higher organism is not completely unstable even at the beginning of its life. There is a "mechanism transmitted by generation," which is "the will and intelligence of ancestors". In every individual there is a psychological "nucleus" of instinct or hereditary habit. And, physiologically, the ovum is not indifferent, but has a tendency to grow into a certain specific and individual form. What is made possible by the process of generation is the recovery, for another individual, of a portion of the "instability" that pre-existing individuals must lose. True or sexual generation is itself made possible by the specialisation that is the result of cell-division. Death of the individual, as has been seen, is the consequence of the specialisation of a complex organism, its division into a stable and an unstable part, and of the tendency of the latter to become stable, so that no further change is possible. Generation is now seen to be the correlative of death. For only by the double process of death and generation is the continued existence of specialising organisms possible. In the case of those unspecialised organisms that multiply by "fission" there is "birth," but, as there is no true (that is, sexual) generation, so there is no "death," except from external accidents. These lowest forms of life are "immortal". We cannot apply to them "the integral notion of natural death," for they "leave no corpse". "But also we cannot apply to them the complex notion of individuality, physical or psychical, since this comprises indivisibility and mechanism."

The discussion of individuality in its relation to generation naturally suggests the question, What is permanent in the individual? Is it a certain portion of matter, an atom or a group of atoms, already present in the germ and unchanged through life, or is it merely a certain form? Can we suppose, as physiologists usually do, that all the matter of the organism is "fluent," and that physical and psychical identity is still preserved, or does individual identity require some material substratum however small? The author inclines to the second alternative. He shows that there is no absolute proof that at the end of a certain time (usually fixed at seven years) every particle of matter in the body has been exchanged with another from outside. It is possible that the matter of the "stable" parts is more persistent than physiologists suppose; and the supposition that a certain portion of germinal matter persists from birth to death is incapable of disproof. The whole body, it is suggested, may be regarded as "a single molecule of infinite complication" consisting of atoms collected around itself by the germinal group on which depends the identity of the organism (p. 133). This theory is not fully worked out, but, as far as it goes, it is strikingly similar to the

theory recently elaborated by M. Burnouf in *La Vie et la Pensée* (see MIND xii. 302).

In Prof. Delboeuf's general speculation, however, the conception of a "monad" as the basis of life and thought is not characteristic. What is distinctive of his theory so far as it relates to the ultimate constitution of things, is his substitution of the atoms of Empedocles for the atoms of Democritus (p. 172). "The primordial elements of the universe are endowed with sensibility, intelligence and liberty." The primitive state, in which they wandered at hazard, is that which the poets have called "chaos". It has only a hypothetical existence; for, immediately after their birth, the elements collided with one another, and, affected in their sensibility, applied their intelligence and their liberty to flee disagreeable and to seek out agreeable encounters. Thus they created for themselves sympathies and antipathies, affinities and repugnances, loves and hatreds. They began to enter into unions with one another, sacrificing part of their liberty for the sake of relative peace, and forming "habits," which became the laws of the universe. Every sensation is the accompaniment of a precipitation of the unstable into the stable. "Laws are the residues of acts primitively free." At first the elements were infinite in number, and each was infinitesimally different from all the rest. Insensibly this infinite primitive variety gave place to groups of substances capable of harmonising, and, among the groups formed, differences more and more profound manifested themselves. Organic molecules were formed, and, in special agglomerations of these, liberty, intelligence and sensibility became more and more concentrated.

Every transformation ends by replacing the transformable by the untransformable. The exercise of life precipitates the unstable into the stable, the living into the dead. Life, indeed, passes from body to body. Dead or relatively stable matter is transformed into living or relatively unstable matter; but this "is only possible at the expense of an inverse and greater precipitation of the unstable into the stable. With true corpses, if such there were, life could never be remade." The evolution of the universe is therefore from absolute instability to absolute stability. Primitively, "every individual was a species," and there were no harmonising groups. When every particle of the universe has taken up a final position in relation to all the rest, there will be a single universal intelligence having clear consciousness of the whole universe as a single organism. This is the final term of the transformation of things.

The law of "the fixation of force" from which Prof. Delboeuf draws the conclusion that the transformations of the universe must have a term is for him both a psychological and a physical law. Its physical expression is of course the law of the "dissipation" or "degradation" of energy. The author has sought the solution of the problem of death, he tells us, "in that great law, the conquest of our century, according to which everything pre-

cipitates itself towards its own destruction in spite of, and because of, the very efforts it makes to maintain itself" (p. 2). That this law, if applied to the sum of things, requires a final term, is incontestable. It may be contended, however, that a different kind of final term would be more logically deduced. Instability, defect of equilibrium, Prof. Delboeuf says in one place, "is something," while stability is only a kind of residue from which nothing more can be obtained (p. 57). From this it seems to follow that the end of things, being absolute stability, must be the "absolute death" affirmed as the end in Mainländer's pessimistic *Philosophy of Redemption* (see MIND xi. 416). If the whole process of things consists in a perpetual diminution of "free" force, then the unity of the world ought to be placed, as it is by Mainländer, at the beginning and not at the end. The more the theoretical basis of the *Philosophy of Redemption* is examined, the more clearly it will be seen to be a perfectly coherent (perhaps the only coherent) metaphysical doctrine starting from the assumption of the law of the degradation of energy as the most generalised expression of cosmical change.

The precise extension of this law, however, is still a matter of dispute among physicists. Apart from any suppositions, such as are made in a recent scientific fiction, about unknown forms of energy, we may safely say that the law of the degradation of energy is not co-ordinate with the law of the conservation of energy, but is true only under special, and as yet imperfectly defined, conditions. Those who, like Prof. Delboeuf, apply it to the whole, ought to define clearly their assumptions as to the constitution of the whole. On slightly different suppositions, would not the process of things take the form of a cycle rather than of a movement from an absolute beginning to an absolute end?

In Prof. Delboeuf's theory of the relations of stable and unstable matter, and of "mechanism" and free intelligence, there is both a speculative element and a positive element. The speculative element consists partly in the theory of the whole process of things that has just been discussed, partly in a theory that acts of free intelligence or will are strictly undetermined. The distinction between the stable and the unstable, it is clear, is not bound up with the assumption that when once a certain portion of force is fixed, the possibilities of change are for ever diminished by so much. And, similarly, the rejection of indeterminism does not affect the psychological distinction drawn between "free" intelligence and fixed habit or "mechanism". The doctrine to which Prof. Delboeuf's theory is really opposed is not determinism, but the doctrine that regards mechanism or unconscious habit as an expression of the perfection of an organism, and consciousness as a sort of aberration expressive of defective function. Again, the psychological distinction of mechanical habit and free intelligence can be maintained independently of any attempt to discover a corresponding objective distinction, such as that between stable and unstable matter; though this last distinction, of course, has a value of its own. It may be

regarded as an expression in terms of chemistry and molecular physics of what has already been expressed physiologically in Prof. Herzen's "physical law of consciousness". With the whole exposition of the relations of stable and unstable matter, Prof. Herzen's recent statement of his psycho-physical law (in his *Conditions physiques de la Conscience*) ought to be compared. The two expositions illustrate the convergence of different lines of thought to the same result. They also show the illusory character of the attempt to make unconsciousness superior to consciousness. The formation of a mental "habit," the "fixation" of a portion of force, or the "stabilisation" of a portion of matter, may of course indicate a psychological advance; but (as Prof. Herzen shows in opposition to Dr. Maudsley) this advance does not consist in the transformation itself of intelligence into habit or instinct, but in the making possible, by the new habit, of a new kind of free consciousness superior to that which was possible before.

The more speculative parts of Prof. Delboeuf's essay are, as has been already said, put forth by him simply as speculations. He does not bring them into definite comparison, on philosophical grounds, with the type of speculation to which he opposes them, but is content to claim for them equal possibility. Such comparison would not be unprofitable. Much might be said of the relation of his general point of view to idealism, and of the relation of his physical to his psychological speculations. The philosophical value of the essay is, however, less in any completed metaphysical doctrine than in its varied suggestions. In view of this, it will perhaps be best to refrain from further criticism, and not attempt to fix in a rigid form what is for the author an attempt to break through the limits of one dogmatism rather than to construct another.

THOMAS WHITTAKER.

Psychologie in Umrissen auf Grundlage der Erfahrung. Von Dr. HARALD HÖFFDING, Professor an der Universität in Kopenhagen. Unter Mitwirkung des Verfassers nach der zweiten dänischen Auflage übersetzt von F. BENDIXEN, Gymnasiallehrer. Leipzig, Fues's Verlag (R. Reisland). Pp. vi., 463.

The translation into German by an able hand of the Second Edition of Dr. Höffding's work on Psychology places an important contribution to the science within reach of the general student. As might have been expected, the Danish treatise follows pretty closely the traditional lines of German psychological investigation. At the same time it has the independence of an outside standpoint. One may say, indeed, that the author's manner of dealing with his subject has been determined quite as much by British as by German models. And to say that the total influence of recent European discussion is large and pervading does not detract from the merit of the work. For it is one of the most promising characteristics of the present state of psychological science that enough has been fixed in the shape

both of positive results, and, what is equally important, of issues demanding solution, to compel all future workers to follow a certain prescribed course. Dr. Höffding has fully recognised this necessity, and he throws himself cordially into the work of co-ordinating and completing the labours of his immediate predecessors. Possibly some may find that now and again the desire to harmonise and systematise the results of the many detached lines of inquiry of which recent psychology consists has led to the appearance of an eclecticism, to the semblance of unity of principle rather than to its reality. Yet a measure of eclecticism seems unavoidable in the present stage of psychological progress. And however this be, it is certain, as Dr. Höffding very clearly sees, that the final unification of psychological results is a work that will have to transcend the limits of the science and call in the co-operation of philosophy.

The work may be said to fall into two main divisions—a general and a special psychology. In the first three sections we have a discussion of the fundamental ideas of the science—*viz.*, its object and method, the relation of mind to body, and of the conscious to the unconscious. This general part occupies about a fourth of the volume. Then follows an account of the common threefold division of psychological elements, and a detailed exposition of the successive manifestations of each in the customary order—intellect (*Erkenntniss*), feeling and volition. Sensation, which is dealt with in its general features only, forms the first subsection under intellect, though its emotional side or *Gefühlston* is carefully considered apart, under the head of feeling. It may be added that the phenomena of intellection and feeling are much more fully dealt with than those of volition. One misses, for example, an adequate recognition of the problems coming under the head of inhibition. The work concludes with a slight though instructive account of individual character.

The author's point of view is pretty clearly indicated at the outset. He claims, as against Lotze, the utmost liberty for psychology as empirical science from all metaphysical presumptions. Psychology has no need of any conception of soul, if by this is meant an absolute being or underlying substance. On the other hand, psychical phenomena must not be carelessly swamped in the sea of biological facts. A truly scientific conception of mind is as far removed from materialism as from spiritualism. Dr. Höffding recognises to the full the services of biological science to psychology, and in his interesting section on mind and body shows how the psychologist is compelled to follow out the intimate connexions of the mental life with organic processes and with the activity of nature as a whole. But he sees at the same time that in its higher manifestations of conscious experience it is something determined by its own forms and laws, and something to be investigated by its own method. The chief characteristics of this conscious life are said to be: (1) change and contrast as condition for the genesis of single elements;

(2) retention and reproduction of elements previously given; and (3) the inner unity of recognition. A fact of consciousness is for our author not an isolated event, as Hume and his followers seem to think, but something essentially bound up with other elements. In other words, the world of consciousness is strongly marked off from the material world by the inner unity of its elements—a unity through which they are seen to belong to one and the same subject, and which has its typical expression in recollection (*Erinnerung*). Hence the author follows Kant in regarding synthesis as the fundamental form of all consciousness. While thus recognising the unity of conscious life as something *sui generis*, Dr. Höffding thinks we may find its correlative or, as he does not hesitate to say, its parallel in the constitution of the nervous system; and he winds up his discussion of the relation of body to mind by seeking to bring out this parallelism, and to interpret it by the hypothesis of a double-faced unity, made familiar to English readers by Lewes and others. In so doing he takes considerable pains to distinguish between the legitimate scientific use of such a hypothesis and the adoption of it as a final metaphysical interpretation; but he hardly succeeds in showing that it is possible to transcend the phenomenal distinction of the mental and the material without encroaching upon the territory of ontology. Of greater psychological interest is the way in which he applies his conception of consciousness as something essentially complex and united to the most elementary psychical states—*viz.*, sensations. The various grades of mental life from the unconscious to the clearly conscious are made to illustrate the same essential characteristics of consciousness.

The detailed exposition of the several directions of the mental life is always interesting and instructive. It may be sufficient here to single out some few of the more important points.

Under Sensation Dr. Höffding, conformably to the general idea of consciousness just indicated, lays a new emphasis on the law of relation, or, as Dr. Bain has phrased it, the relativity of mental states. And here he meets with good effect Prof. Stumpf's recent criticism of this principle. The latter distinguishes sharply between the sensation as something independent and absolute and the mind's judgment on the same. But our author reminds him that "every proper judgment is preceded by the immediate reciprocal relation of the sensations themselves, in which we have the very first form of conscious activity which in the higher stages we call comparison and judgment". And he adds that "for so elementary a relation as this, language has formed no suitable expression". The simplest act of perception is for our author the recognition or identification of a sensation, an operation which involves no consciousness of the external origin of the sensation. What is ordinarily called a perception is according to this view a "compound perception". The relations of the several elements in the perceptual process and the differences between this and "free representation" are set forth

by help of symbols, a device for which Dr. Höffding, like Mr. Ward and other recent psychologists, shows a strong liking. The symbolic representation of the two great laws of association, and of their mutual implication, is well worthy of study even after Mr. Ward's recent masterly treatment of the same subject. The higher processes of thought, abstraction, judgment, &c., are, it is hardly needful to say, regarded as merely a rendering more explicit and precise under the control of the will, of the relations involved in the more elementary intellectual operations. The discussion of the space-question is cautious and critical, and shows the author's power of dealing with a highly complex problem impartially on all its sides.

The whole exposition of feeling and its laws is marked by fine knowledge of the phenomena and clear scientific insight. The relation of feeling to intellection is admirably set forth. Pleasure and pain are present in the most primitive mental states, and therefore cannot be regarded as a mere result of the interaction of intellectual elements. At the same time, in all its higher phases, feeling is pervaded with and modified by such intellectual elements. And it is the special object of this section to trace the gradual developments of the elementary feelings and their transformations into a wide variety of forms under the action of growing experience and intelligence. Here the author makes good use of the first manifestations of feeling in infancy, and of the more striking and picturesque illustrations of human passion presented in literature. It may, however, be doubted whether it is possible to develop the wide variety of emotional states from a common elementary root in the way here attempted. In any case, the manifestation of a number of typically distinct feelings in the first years of life might suggest that ancestral experience and heredity play a larger part here than Prof. Höffding, who is generally a cordial acceptor of evolution, seems to recognise. A further objection may be taken to the way in which the author defines the relation of the intellectual and the emotional factor in the reproduction of feeling. There is no doubt that all *definite* revival of feeling depends on intellectual processes of association in the way so ably illustrated by Dr. Höffding. But when he writes: "Thought is the more mobile part of our being: feeling forms the foundation to which effects are only gradually transmitted from the more mobile surface," he seems to be overlooking important facts. Is it not at least as common for feeling in the vague shape of dim recalling or foreboding to precede definite ideation as for this last to precede emotional disturbance? Here perhaps a more adequate grasp of the relations of sub-conscious to conscious mental processes would have been of service. But though now and again the critical reader may take exception to general statements, he will lay down the work with a feeling of deep indebtedness to the author for what on the whole is a masterly and interesting elucidation of the dark region of psychological fact.

JAMES SULLY.

VI.—NEW BOOKS.

[*These Notes (by various hands) do not exclude Critical Notices later on.*]

A Dictionary of Philosophy in the Words of Philosophers. Edited with an Introduction by J. Radford Thomson, M.A., Professor of Philosophy in New College, London, and in Hackney College. London: R. D. Dickinson, 1887. Pp. xlviii., 479.

This *Dictionary* has been based on a collection of passages from philosophical writers made by "a collator of experience". The editor's part has been to excise on the one hand and extend on the other, with the view of holding the balance even among the different schools or the different topics. In particular, it appears to be due to the editor that a fair representation has been given of the later scientific psychology as well as of the recent Kantian movement in English philosophy. To him also is due the present arrangement of the whole mass of extracts—according to principles which, if nowhere explicitly stated, are more or less implied in an Introduction that deals successively with the definition, divisions and origin of philosophy, its history in general and its present state in this country. The arrangement is topical throughout, without other alphabetical clue than is supplied by two concluding indexes, of names and of subjects. The index of names is, in its way, pretty complete; not so the other. This is far too little detailed to be of real service, especially as no table of contents in their actual order is anywhere set out. The *Dictionary*, in point of fact, affords a good deal more information than the index of subjects gives any notion of: for example, Leibniz's important distinction of symbolical and intuitive knowledge is not omitted, but is far from having its presence sufficiently suggested by "Knowledge, Application of," even when the index of names adds "Leibniz, Knowledge". The absence of a table of contents, setting out the main topics in order of treatment and the steps of the treatment in order, is to be regretted in the interest of the student, more than in the interest of the reviewer. The reviewer can, at a certain cost of time, turn over the pages and discover that there are twenty-four main topics in all; that the first two are general or introductory ("Designations, &c.," "Mind"); and that the remaining twenty-two are grouped under three heads of "Psychology and Philosophy"—(A.) "of Cognition," (B.) "of Feeling," (C.) "of the Will"—and one of (D.) "Moral Philosophy or Ethics". The last (§§ 19-24) includes as final main topic "The Immortality of Man". Under "Cognition" (§§ 3-13) the most noticeable feature is that the three closing sections (pp. 223-91) are taken up with an attempt to characterise the chief philosophical thinkers or schools—ancient, mediæval and modern—by extracts almost entirely drawn from books written about them. Regarding the *Dictionary* in general, it is not to be denied that good and intelligent use has been made of the material collected, perhaps as good use as was at all possible; nor should the editor's manifest effort to give fair and full representation of views with which his Introduction shows him to have least sympathy, remain unacknowledged. It is the original collector's work that, as far as its quality may be judged from the evidently extensive remains of it, lies most open to criticism. Confining himself (as the editor does too) for the most part to modern books in English (original or translated), the collector seems, first of all, to have been excessively liberal in his allowance of philosophical character to particular works, and then, among works to which that character might

not unfairly be accorded, to have been prone to make chief use of some that can hardly be called the most important or even, for effective and condensed statement, the most transcriptable. The consequence is that, after all editorial pruning, there are many pages (easily to be remarked) that are by no means wisely filled; while from others much is found missing that should have been freely supplied. Take, in the way of omission, the single example of "Unconscious mental action," disposed of, p. 46, in two extracts from Carpenter's *Mental Physiology* and a few lines from Mill's *Hamilton*, followed as to "Subconsciousness" by another extract from Mill (not containing the word) and one from Sully's *Psychology:* not a word from the long discussion in Hamilton's *Metaphysics* nor the slightest mention of Leibniz's 'obscure perceptions'! But it seems ungracious to dwell further on shortcomings, when to have carried through the work at all, even within the narrow and artificial limits set, means no light amount of protracted and anxious labour. Though, neither in conception nor in execution, is this the Dictionary of Philosophy that one could desire for the use of English students, it brings together a multitude of passages from philosophical writers that cannot be read without great and varied interest and disposes them in a form that would—if supplemented by a fully detailed index of subjects—be found serviceable for some purposes of reference even by the most advanced.

Romantic Love and Personal Beauty, Their Development, Causal Relations, Historic and National Peculiarities. By Henry T. Finck. 2 Vols. London and New York: Macmillan & Co., 1887. Pp. x., 424; viii., 468.

These fascinating volumes are, as the title indicates, first of all an historical and comparative "monograph" on the sentiment of "Romantic —or pre-matrimonial—Love," which, in the author's view, "is a modern sentiment, less than a thousand years old". "Not till Dante's *Vita Nuova* appeared was the gospel of modern Love—the romantic adoration of a maiden by a youth—revealed for the first time in definite language." "And even Dante was not entirely modern in his Love." "He became quite deaf to the fundamental tone of love, and heard only its overtones. And herein lies his inferiority to Shakespeare," for whom it remained "to combine the idealism with the realism of Love in proper proportions". "Shakespeare's Love is Modern Love." Within the last two centuries the poets and novelists have caused love to assume gradually "among all educated people characteristics which formerly it possessed only in the minds of a few isolated men of genius". The art of Courtship that springs out of Romantic Love "is the latest of the fine arts, which even now exists in its perfection in two countries only—England and America"; for Romantic Love depends "on the freedom and the intellectual and æsthetic culture of woman"; and in other civilised nations there is more or less complete suppression of one or both of these conditions. Although in developing his historical thesis the author is sometimes perhaps "too sweeping" (as he himself remarks of a criticism of Schiller on the Minnesingers), this thesis is one to which no one can refuse a hearing who does not deny altogether that there is any historical evolution of emotions. And occasional exaggerations, such as what is said of "the absolute silence of Greek literature on the subject of prematrimonial infatuation" (i. 122) are corrected by the general exposition. According to the author's view in its full development, there are in antiquity the beginnings, but only the beginnings, of Romantic Love. In the early Middle Ages, these disappeared under the asceticism of Church Fathers and the general barbarism of the period. Renewed by chivalry, and above all by the German Folk-songs,

they were at length combined by Dante and Shakespeare into the modern sentiment, with all its distinctive characters or "overtones". Of these there are in all eleven (i. 48-52); the last enumerated being "Admiration of Personal Beauty". This "æsthetic overtone of Love," which "is commonly heard before and above all the others," tends more and more to become of "preponderating importance". Modern Love depends especially on the charm of individual expression, to which the Greeks were indifferent, and this in turn on intellectual cultivation. The modern development of Romantic Love may be compared with the modern development of the art of Music; "the individualisation of Beauty and character" being comparable to the discovery of harmony (ii. 137-8). All this is developed with a liveliness of style and an abundance of interesting observations of which it is impossible to give an idea in a summary. Most of the qualifications and distinctions that a critic could suggest find their proper place in the volumes. But Mr. Finck does more than develop the evolutionary theory that his title promises. The special interest of the book is in its seeking rational grounds for freedom of matrimonial choice. Regarding everything from the point of view of the race, the author rejects at once the French system of "marriages of reason" and (implicitly) the proposals of those ancient theorists and modern anthropologists who have thought that choice should be based on other reasons than personal preference, and decides for the "Anglo-American" system. To get at his conclusion, he starts from a discussion of Schopenhauer's theory; and his own theory is in reality Schopenhauer's without the pessimism, and with scientific verification. "Apart from the suggestive details of his essay," Mr. Finck says, "Schopenhauer's merit and originality lie, first, in his having pointed out that Love becomes more intense the more it is individualised; secondly, in emphasising the fact that in match-making it is not the happiness of the to-be-married couple that should chiefly be consulted, but the consequences of their union to the offspring; thirdly, in dwelling on the important truth that Love is a cause of Beauty, because its aim always is either to perpetuate existing Beauty through hereditary transmission, or to create new beauty by fusing two imperfect individuals into a being in whom their shortcomings mutually neutralise one another" (ii. 73). Romantic Love, with its free choice, the preponderance in it of the æsthetic element, and its individualisation, thus promotes the interests of the race in the highest degree. And "Anglo-American Love is Romantic Love, pure and simple, as first depicted by Shakespeare, and after him, with more or less accuracy, by a hundred other poets and novelists" (ii. 37). "Love is the cause of Beauty, as Beauty is the cause of Love;" but it is only one cause. "Personal Beauty has four sources"—Health, Mixture of Nationalities, Romantic Love and Mental Refinement. When the relations of all these are considered, it is seen yet more clearly in what way all the interests of the race are inseparably associated with Romantic Love.

Psychology. The Motive Powers. Emotions, Conscience, Will. By JAMES M'COSH, D.D., &c., President of Princeton College. London: Macmillan & Co., 1887. Pp. vi., 267.

This is the promised sequel to the author's *Cognitive Powers*, noticed in MIND xi. 586. While admitting the importance of the modern threefold division of the mental powers, Dr. M'Cosh insists that "it is of moment to keep up the old twofold division as being the deepest, as having run through the ages, and as being embodied in our habitual thoughts and in common literature". The modern distinction, he thinks, "leaves out the moral power or conscience, which is entitled to have a separate place as one of the characteristics of man, specially distinguishing him from the

lower animals". The twofold division, as he points out, corresponds to Aristotle's distinction of the "Gnostic" and the "Orective" powers; and, throughout, he seeks an Aristotelian basis for his psychological positions. "The motive powers" are divided into "the emotions, the conscience and the will". The work, accordingly, falls, after a short introduction, into three parts: "The Emotions" (pp. 7-192), "The Conscience" (pp. 195-227), "The Will, or Optative Power" (pp. 231-267). The section on the Emotions is divided into two books of approximately equal length, entitled "The Four Elements or Aspects of Emotion" and "Classification and Description of the Emotions". This part is largely an abridgment of the author's work on *The Emotions* (noticed in MIND v. 290). An outline of its leading positions will be found in the notice just referred to, and in a Note by the author in MIND ii. 413-15. As regards Conscience, Dr. M'Cosh's position is that "by the moral sense we know more than we do by the senses, inner or outer" (p. 196). "The Conscience is not merely co-ordinate with the other powers: it is above them as an arbiter and a judge. . . . In fact, it is the Practical Reason" (pp. 209-10). The moral power "is in all men native and necessary; but it is a norm requiring to be evolved". The facts of its historical development "may be admitted, while we hold that the moral power could not have been produced without a native moral norm any more than a plant or animal could have been produced without a germ". That which, in intelligent beings, is commended by the conscience, is "love ruled by law" (p. 227). Will is something different from an exercise of the understanding, of conscience or of the emotions. Moral good and evil consist essentially not in emotion nor in the possession of a conscience, any more than in the mere external action, but in "an act of will". Responsibility is coextensive with will. In the discussion of the place of voluntary preference in virtue, of the relations of habit and responsibility, and of the characters of virtue and vice, the author's dependence on Aristotle is especially evident. The will, he contends, "has freedom," because it is not "determined by motives," if by motives be meant "powers out of the will acting independently of it" (p. 259). The influence of will in mental acts that are not classed as volitional is pointed out without exaggeration. The "main Secondary Law" of Association is found to be "that those ideas come up most frequently on which we have bestowed the largest amount of force of mind, and this may be intellect, feeling or will" (pp. 243-4). "The energy bestowed on an idea" "commonly takes the form of Attention," which is an act of will. Altogether, the work has the merits of the author's previous work on *The Emotions*. The section on Will especially is full of sound psychological distinctions and observations.

The Game of Logic. By LEWIS CARROLL. London: Macmillan & Co., 1887. Pp. 96.

In this pretty little volume, the author of *Alice in Wonderland*, without surrendering his old playful purpose, tries to give youthful readers some general notion of logical processes. The design is worthy of all praise: for nothing should be easier, if teachers were knowing enough, than to convey with the first lessons in grammar a great deal of useful logical doctrine; and children might have much amusement of a cheap kind in watching the logical practice of their elders, even if not set to regular games with propositions and arguments. It is not so clear that the author has taken the best way for working out his purpose. He has a new mode of graphically representing propositions (by full or empty compartments within a square), which is sufficiently ingenious, but which seems to put rather heavy shackles upon the juvenile reasoner exposed to the common speech

of human kind. When the universal affirmation, "All new cakes are nice," cannot be understood and worked with except as made up of the two propositions, "Some new cakes are nice" and "No new cakes are not nice," one begins to doubt whether the author has not been a little more concerned to be inventive than either edifying or amusing. And if the instruction might be simpler and more effective, the interpolated humour also might be more happy: at least it is not easy to imagine that the boy or maiden who can follow the author's rather technical exposition will be tickled by quips that appear suited for only *very* young children. But whether the author succeeds or not with his proposed aim, this scheme of graphic representation is by no means undeserving of attention by the side of the others that have been devised of late years. Like some other of the innovators, he can do scant justice to the traditional system, as at p. 35, where the mare's nest of the two negative premisses is again discovered, with an air of importance almost as grave as Jevons displayed on the occasion.

Studies and Exercises in Formal Logic, including a Generalisation of Logical Processes in their Application to Complex Inferences. By JOHN NEVILLE KEYNES, M.A., University Lecturer in Moral Science, Cambridge. Second Edition revised and enlarged. London: Macmillan, 1887. Pp. xii., 455.

The usefulness predicted for these *Studies* when reviewed in MIND ix. 301 is proved by the call already for a second edition. The whole book has been carefully revised, and considerable parts of it have been rewritten, with the result of enlargement by about 30 pp. It is a distinct improvement that the unanswered exercises are now separated out from the expository matter, and placed at the end of the chapters; also that an index has been added. In its new form, the book will be still more helpful to students than before.

A Treatise on the Principle of Sufficient Reason. A Psychological Theory of Reasoning, showing the Relativity of Thought to the Thinker, of Recognition to Cognition, the Identity of Presentation and Representation, of Perception and Apperception. By Mrs. P. F. FITZGERALD. London: Thomas Laurie, 1887. Pp. xvi., 410.

The philosophical purpose of this book is described in the sub-title. The "two doctrines" that constitute its foundations are—"first, the existence of God, who from His very nature is, and must be, good, because He is the Source and Giver of all good, and Ordainer of the moral law; and secondly, that of the necessity of the *divinely-ordained counterpartal union* of every human soul with its complementary spirit". In other words, "*love, human and divine, is the secret of happiness—the true Best for Being*" (p. 3). "The complete idea or mental representation of Being, which constitutes intelligence, *νοῦς*, the Gnosis, the light that lighteth every man that cometh into the world," is "present in each individual man through his faculty of reflecting on the presentations of his own inner Being, and through the logical principle of what is experienced in being, generalising through comparison of less and greater, until he arrives at the idea of perfect, absolute Being" (p. 243). What is notable in the author's development of this form of mysticism is the insistence on permanent distinctions of personality. The individuality is not to be suppressed, but "self-preservation" is "the first law alike of the animal and the spiritual life" (p. 228). "If we choose to sacrifice our life for love, it is still because it is our own joy so to do. Feeling is not to be extinguished for the good for Being, as the Bouddha Sakhya Mouni taught; for as the blood is the

life of the beast, so is love the life of the spirit. Being is to be developed by and through natural, designed relativity; through the harmonious union and communion of spirits with each other, and with the Father of Spirits—this is the true unity of Being, the true service of God." In spite of what the author calls its "not very orderly elaboration," there is much in the book that is philosophically suggestive. It is illustrated by the results of multifarious reading, especially among the philosophers and poets.

The Cosmology of the Rigveda. An Essay. By H. W. Wallis, M.A., Gonville and Caius College, Cambridge. Published by the Hibbert Trustees. London: Williams & Norgate, 1887. Pp. xii., 130.

"The object of this essay," the author says, "is not so much to present a complete picture of the cosmology of the *Rigveda*, as to supply the material from which such a picture may be drawn. The writer has endeavoured to leave no strictly cosmological passage without a reference, and to add references to illustrative passages when they appeared to indicate the direction in which an explanation may be sought." The result is a very full account of the imagery by which the Rishis represented the origin of things, under the heads of "The Building of the World," "Generation" and "The Sacrifice" (cc. i.-iii., pp. 16-90). The general conclusion may best be summarised in the author's own words:—"We have now passed in review the three most circumstantial explanations of the origin of the world. In the first chapter it was regarded as a work of art; and since the principal manufacture known to the men of the time was the working of wood, the world was pronounced a production of builders and joiners. In the second chapter the origin of the world was ascribed to the agency of that visible process which is the cause of all natural, as opposed to mechanical, production. In the argument of this chapter (c. iii.) the origin of the world was supposed to have been effected by a similar instrumentality to that which is represented as the most efficacious in the hands of man, the formal sacrifice. The three explanations are not mutually exclusive; any two of them or all three are frequently combined together in one verse. The classification adopted in this essay is, therefore, to be regarded as one of practical convenience only. Further, it must not be supposed that what is here described as the system of the Rishis was their exclusive possession. There may have been laymen whose views were more sacerdotal than those of the priests; as there may have been, and doubtless were, priests to whom speculation was dearer than ritual. On the other hand, a classification based on later forms of thought would have been positively misleading. We may very easily persuade ourselves that in some isolated verse we have discovered the starting-point of a later philosophy, where the comparison of similar passages shows that it was only the poverty of our imagination which confined the meaning within our own particular range of thought. The *Rigveda* must be made its own commentary. It is a not infrequent occurrence that a whole complex of modern ideas finds its most happy and appropriate expression in an old term, or a proper name or attribute, or in the words of an ancient saying. The words themselves have contributed nothing to the formation of the ideas; they had lost their first meaning and were fast falling into oblivion, when the breath of a spirit from another sphere inspired them with a new vitality." The great difference of the speculations of the *Veda* from those of the *Upanishads* and of later philosophy is that the former are more disinterested; representing the origin of the world in analogy with the known modes of the production of things, but with no thought of purpose. The three chapters above referred to are preceded by an introduction on the distinguishing charac-

teristics of the *Rigveda* and followed by a chapter on "The Order of the World" as conceived by the Rishis (c. iv., pp. 91-108), and an appendix on "The Cosmography of the *Rigveda*" (pp. 111-117). [Since these lines were written, a few weeks ago, the death of the young author has been announced. A life of much promise is thus cut short.]

Agnostic Problems, being An Examination of Some Questions of the Deepest Interest, as Viewed from the Agnostic Standpoint. By RICHARD BITHELL, B.Sc., Ph.D., Author of *The Creed of a Modern Agnostic*. London: Williams & Norgate, 1887. Pp. viii., 152.

This is a sequel to *The Creed of a Modern Agnostic*, noticed in MIND viii. 456. Its contents are sufficiently indicated in the sub-title. "The Agnostic standpoint," as defined by the author, is that "that which comes within the sphere of consciousness may be known. . . . But whether the realities which exist outside the sphere of consciousness correspond in any way with the conceptions of which we are conscious, is a question which we have no means whatever of solving." "On the side of the Knowable," the Agnostic "founds and cultivates his Science; on the side of the Unknowable, he finds an illimitable arena for the exercise of Belief and Faith".

The Philosophy of Religion on the Basis of its History. By Dr. OTTO PFLEIDERER. Vol. II., "Schelling to the Present Day," translated by ALLAN MENZIES, B.D. London: Williams & Norgate, 1887. Pp. ix., 316.

The present volume, following upon the one noted in MIND xi. 587, completes the historical half of Pfleiderer's work: the "genetico-speculative" half remains to be similarly broken up into two volumes. (It was an error in previous notice to speak of the translation as to be in three volumes, artificially divided.) The rendering continues worthy of the subject. Besides a few new sentences on the Zürich theologian Biedermann, the author, with English readers in view, has added a paragraph (p. 309) on Prof. H. Drummond's *Natural Law in the Spiritual World*, and gives at pp. 182-6 an estimate of Mr. M. Arnold's contributions to the theory of religion. He finds Mr. Arnold's conception of a "Not-ourselves" to be not less metaphysical and much vaguer than that for which it is sought to be substituted, and, after referring to his historical interpretation, thus sums up: "Arnold is no doubt a writer of great and many-sided acquirements; all that he writes is pleasant to read and full of suggestions: but he possesses no real grip either in philosophy or in history, and if he thinks he can make this want good by dint of clever and eloquent writing, he is mistaken; nor will it mend his error to exalt himself, and make his readers merry at the expense of those who have treated serious problems more seriously than he".

Matter and Energy: Are there two Real Things in the Physical Universe? Being an Examination of the Fundamental Conceptions of Physical Science. By B. L. L. London: Kegan Paul, Trench, 1887. Pp. 85.

This is an attempt to reconcile Science and Idealism by the assumption that the reality postulated by science is not Matter but Energy. Matter is merely phenomenal; bodies are only "elements of our sense-experience," not "independently existent things". "Take an example—a stone for instance. Do you, the reader asks, revert to Idealism, and say it ceases to exist when you cease to experience it? We reply that the phenomenon we call a stone, which belongs to the class we call bodies, does so cease; but that there continues to exist its external cause, which, however, is

nothing more than certain forms of so much Energy transforming itself in certain ways." "Energy alone is *the* real thing, of which we have no immediate experience, but experience only its results." Space, the primary and secondary qualities of body, and the different chemical kinds of bodies, are all explicable in terms of Energy and its transformations (pp. 69-74). Energy is really indestructible. Matter is "*historically* indestructible,—real as an *event*, but not real as an independently existing entity". "The conception of material bodies, if freed from the erroneous assumption of independent reality, is a most useful abbreviation—like an algebraical symbol—of what would in terms of Energy alone take much longer to express." "In the grand doctrine of Energy, as a thing not perceived by the senses, but apprehended by the intellect and discovered by the reason alone," Science has "furnished Philosophy with the long-sought conception of a consistent rational, unsensational, real 'universal'".

Morality and Utility. A Natural Science of Ethics. By GEORGE PAYNE BEST, B.A., M.B., Cantab. London: Trübner & Co., 1887. Pp. vii., 200.

This study had its origin in the author's conviction that the Moral Law, having the characters of Absoluteness, Universality and Permanence, cannot be identical with Utility. The conclusions to which he has been led on from this starting-point are, he says, somewhat different from those at which he expected to arrive. For while he arrives at the distinction between "truth of Utility" and "truth of Morality," corresponding to the distinction between approval of actions for their useful effects and approval of them for their conformity to the Absolute Right, Morality or Justice of intuitional moralists, he also finds that "truth of Morality" is "not the kind of truth that can be put into practice". The absolute moral ideal is only applicable in an ideal world, the conditions of which are inconsistent with reality. An absolutely uniform law can only apply to an absolutely equal population; and for a population to be absolutely equal, it must consist entirely of adult members, all asexual and immortal (p. 77). Buddhist and Christian Monachism and modern "Social Democracy" are alike attempts to realise parts of the moral ideal (which can only exist as a whole) in the world of facts. The result of the socialistic "attempt to take parts from the ideal world, and mix them with the world of facts," must be "to make the world of facts infinitely worse than it is for *everybody*". "The Moral Sense, truly, declares that men are equal. Observation of the world of facts shows that men are altogether unequal." "The existing order of things is not moral, but utile." The explanation of the discrepancy between Morality and Utility is that Morality, like mathematical science, feigns a greater uniformity than really exists. "In the case of Mathematics, we are really dealing with our own ideas; and, even when we apply those ideas to the concrete, we apply them only to certain abstract elements of that concrete. But with Morality it is otherwise. We are dealing with the world of men, women and children, in all their concreteness and difference; but we are treating them *as if they were mere ideas.* The upshot is that, though Morality may be true enough for our ideas; or for men and women, if they were, as treated in thought, really equal; as applied to actual men and women, it gives a false result." Absolute Morality, then, is an illusion,—but an illusion that has had good effects, not only in the production of ideal characters, but in the gradual improvement of things as estimated by the utilitarian test. "Suppress Morality (as the Utilitarians have done), and you have destroyed—at least in theory—the golden bridge by which man passes out of the category of personal considerations to those of a wider sphere. *Morality is the decoy*

which leads us to Virtue." "Now Virtue, with its correlated Duty and Obligation, is a part of Utility—it is consistent with Utility: which Morality is not. In Virtue the interests of the individual and of Society are reconciled."

Absolute Relativism; or the Absolute in Relation. By WILLIAM BELL M'TAGGART, late Captain 14th Hussars. Vol. I. London: W. Stewart & Co. Pp. viii., 133.

The author's ultimate purpose is a reconciliation of the religious and the scientific philosophy of the day. "The fetiches of the hour are personality and intelligence of the 'All-upholder' on the one hand, as against 'non-personality and mechanical necessities of the ultimate substratum'. . . . Both camps seem regardless that the other holds at least one aspect of the truth, and that a higher knowledge and a wider generalisation may unify the two into All-personality and All-theism." His purpose in the present volume—divided into three parts, entitled "Prolegomena" (pp. 1-22), "Materialism" (pp. 25-86) and "Idealism" (pp. 91-133)—is by successively reviewing materialistic and idealistic philosophy, as stated by "their accepted representatives," to arrive at the unquestionable truths of each system in the form of certain ultimate "axioms". What remains is to find out how the truths of these and other philosophies limit one another, and how they may yet "exist synchronously within Infinity". The result attained so far is this:—"Having started with the postulate I=I, in the endeavour to ascertain, by the avenues of experience and reason alone, what that Ego was or is, we have lighted upon the certain demonstration that it is complex instead of simple, and that the postulate, the I, includes the postulate and demonstration of the existence of the Not-I also".

Life of Adam Smith. By R. B. HALDANE, M.P. ("Great Writers.") London: Walter Scott, 1887. Pp. ix., 161, x.

More than half of this volume is devoted to the account and consideration of Smith's work as an economist; his work as a moralist is disposed of in a short chapter (pp. 56-73), following upon a graphic sketch of the life. The author presses the charge of want of system too far against the *Theory of Moral Sentiments*, whether by itself or in comparison with Hume's ethical performance. Great as Hume's general philosophical importance is, it can hardly be said of him as a moralist that it was he "who first made it plain that Metaphysics and Ethics are inextricably intertwined" (p. 25); and if Smith was no metaphysician, it cannot therefore be said that he did not take up a position of permanent mark, after or by the side of Hume, in the ethical movement of his century. At p. 65, in reference to Smith's exclusion of "Utilitarian" considerations, it is somewhat loosely remarked that Hume also made light of such when he refused to find "the guiding principle of conduct in the tendency to seek self". And is Hume's proclamation of the principle of Utility well described (p. 66) as a "suggestion thrown out" in "somewhat cynical scepticism"?

Proceedings of The Society for Psychical Research. Part xi. London: Trübner & Co., 1887. Pp. 209-605.

Since last notice in MIND, two Parts of these *Proceedings* have appeared. Part x., unfortunately, is not at hand for notice, but it would be a pity to therefore delay drawing attention to the excellent work that is to be found within Part xi. Whatever difference of opinion there may be as to some of the Society's lines of activity—on the conclusiveness of the case for "Telepathy," in particular, see an article, "Where are the Letters?" by Mr. A. Taylor Innes in *The XIXth Century* for August—there can be no

question about the value of the work that has been done in exposing the pretensions and frauds of certain persons that have lately preyed upon human credulity. An important paper by Mrs. H. Sidgwick (in the previous Part) on her experience of spiritualistic mediums is here followed up by an elaborate memoir (pp. 381-495) on "The Possibilities of Mal-Observation and Lapse of Memory from a Practical Point of View," the joint-work of Mr. R. Hodgson and Mr. S. J. Davey. Mr. Hodgson (who exploded the Blavatsky imposture) writes a general "Introduction" to the "Experimental Investigation" which he helped Mr. Davey to conduct; Mr. Davey being a man of first-rate conjuring powers, who has been able to equal (if not surpass) all that has been achieved by professional "mediums" in the way of slate-writing. Never pretending with his sitters to any supernatural powers, and even putting them on their guard against trickery, Mr. Davey has yet been readily credited with thaumaturgic attributes, and the investigation consists mainly in a critical comparison of the written reports furnished by the sitters, of what they saw, fancied they saw or failed to see. Nothing could be more instructive than the evidence thus obtained of the fallibility of human observation and memory, especially under the sway of emotion; the different emotional moods of the various sitters—according as they knew nothing, little or much of the actual conditions under which the phenomena were produced—giving to the reports the liveliest diversity of hue. Beside other papers of psychological interest, the Part contains two important researches by Mr. E. Gurney. One on "Stages of Hypnotic Memory" (pp. 515-31) adds most striking evidence to what he before adduced in MIND ix. 110 ff., x. 161 ff., as to the discontinuity of memory between different stages of the hypnotic trance and its continuity between recurrences of the same stage,—within limits, however, that are now for the first time approximately defined. The other memoir on "Peculiarities of certain Post-hypnotic States" (pp. 268-323) is still more remarkable for the light it throws, by a protracted series of experiments (some, with planchette, of a quite novel description), upon those most puzzling manifestations of "secondary intelligence" that are disclosed in the performance, more or less unconsciously, within the waking state of orders given in the hypnotic trance. In both memoirs the writer touches, with a skilful hand, on the philosophical implication of the facts, as bearing on the question of personal identity.

Essai de Psychologie Générale. Par CHARLES RICHET, Agrégé à la Faculté de Médecine de Paris. Avec figures dans le texte. Paris: F. Alcan, 1887. Pp. xiv., 193.

"General psychology," in the author's conception, is a synthesis of psychological facts, viewed in their general aspects, from the knowledge of their ultimate elements made possible by physiology, of which psychology is simply "the obscurest chapter". A notion of his procedure is given by the order of treatment he adopts, which is as follows:—(1) "Irritability," (2) "The Nervous System," (3) "Reflex Movement," (4) "Instinct," (5) "Consciousness," (6) "Sensation," (7) "Memory," (8) "The Idea," (9) "The Will". "Cellular irritability," which includes both "sensibility" and "motor reaction," may be regarded as "elementary psychical life". It manifests itself under the three forms of "reflex action," "instinct" and "intelligence". The characters alike of reflex action and of instinct are "fatality and finality". That is to say, they take place for the advantage of the organism or the species, but without consciousness of their end. All the distinctions of instinct from reflex action depend on its greater complexity. "Instinct, or at least complicated instinct, supposes unintelligence, just as intelligence supposes the absence of instinct." Man has

reflex actions and intelligence, but no instincts properly so-called. Consciousness is "a phenomenon superadded to movement and independent of it," and modifying neither the external excitation nor the reaction of the organism. The author recognises the difficulty of admitting "unconscious sensibility" and "unconscious sensations," but uses the terms with a proviso against misunderstanding. "Sensation with consciousness," in his definition, is "perception"; "perception with attention" is "apperception". Animals, down to "the middle of the zoological scale," probably have consciousness, "at least vague and confused"; but there is no profit in observations on any but the human consciousness. In man there is consciousness of "sensation" and consciousness of "motility," to which a still more important element is to be added, *viz.*, memory, which may be said to create consciousness and the unity of the Ego. Consciousness, in ultimate analysis, is "a succession of states of consciousness with recollection". "Sensation is a physiological phenomenon, and perception is a psychological phenomenon." The laws of sensation agree (perhaps not exactly) with the laws of muscular irritability. Hence study of the laws of muscular contraction is the best introduction to physiological psychology. "Emotions" are "sensitive instincts (as distinguished from "motor instincts") with consciousness". The will is essentially a "force of inhibition," which may be exercised either by an "idea" or a "reflex" in a struggle against others. When the struggle between ideas is not on too unequal terms, we have the illusion of free-will. "Attention," "the best-defined form of will," is "an apparatus of excitability that reinforces images". Finally, "intelligence" is "an explosive mechanism with consciousness and memory"; for the essential character of organisms, that becomes more and more manifest as we ascend the zoological scale, is the power, which explosive substances also possess, of setting free large amounts of energy in response to a slight initial change; and this character is most of all manifest in the phenomena of intelligence, these being organically the highest.

L'ancienne et la nouvelle Philosophie. Essai sur les Lois générales du Développement de la Philosophie. Par E. DE ROBERTY. Paris: F. Alcan, 1887. Pp. vi., 364.

This volume is the first part of a work which, as projected by the author, will consist of six similar parts. His system may be described as a modified Positivism. The object of his first volume is to study the philosophy of the past and present as "a social fact," necessary in a certain stage of evolution, but destined to give place to the synthesis of the sciences which is to be the philosophy of the future. He accepts Comte's law of the three states, but only as an empirical formula deducible from more fundamental laws, *viz.*, "the law of the three types of metaphysics" and "the law of correlation between science and philosophy". Theology and metaphysics alike are hypothetical theories of the universe constructed in the absence of a sufficient basis of positive science; theology being essentially an inferior and popularised form of philosophy, existing in general side by side with metaphysics. Metaphysical hypotheses are of three types—Materialistic, Idealistic and Sensualistic. Every metaphysical hypothesis is an attempt to explain the universe in terms of the phenomena that form the subject-matter of one particular group of sciences. Thus the materialist explains all phenomena by reference to the laws of inorganic nature, while the idealist explains them all by reference to the higher psychical and social phenomena. These two forms of metaphysics are contemporaneous in origin and continue to exist side by side. Materialism is a kind of premature positivism. Idealism has the characters of a reaction and tends to attach

itself to theology. Sensualistic philosophy is chronologically later than the two others. It has the same relation to the biological sciences that the other forms of metaphysics have respectively to the sciences of inorganic nature and to the social sciences. Though sometimes brought into alliance with materialism (as by Hobbes and by the French Sensationalists of the 18th century) and sometimes with idealism (as by Berkeley), it is essentially a distinct type of metaphysics, having for the ultimate terms of its ontology "sensations"—that is, those psychical phenomena of which the biological conditions are first discovered—and the "representations" that result from them. What determines the character assumed by each metaphysical doctrine in every age is the state of the positive sciences in that age. This is the "law of correlation between science and philosophy". In general no affiliation of philosophies to one another is to be attempted. They depend, not on the previous state of philosophy, but on contemporary social conditions; the dominant condition being the state of the positive sciences. The "metaphysical stage" of philosophy is characterised by its "false independence" of the sciences. The positive sciences, on the other hand, are uninfluenced, or only influenced to their injury, by metaphysical doctrines. Each positive science depends for its development on the antecedent sciences, as philosophy depends on them all. The scientific philosophy of the future will resemble the philosophies of the past in being a "conception of the universe". Its difference from them will consist in this, that it will not be hypothetical,—hypotheses having their place in special science where they can be verified, not in philosophy where they are assumed simply because knowledge has not yet become scientific,—but will be a synthesis of all the general results of the sciences, including the as yet rudimentary group of the psychical and social sciences. Positivism may be regarded as its "anticipation".

Essai sur le Libre Arbitre, sa Théorie et son Histoire. Par GEORGE L. FONSEGRIVE, Professeur agrégé de Philosophie au Lycée de Bordeaux. Ouvrage couronné par l'Académie des Sciences Morales et Politiques. Paris: F. Alcan, 1887. Pp. 592.

This is a history of the question of free-will, followed by a theory, founded on historical criticism, of the relations of freedom and necessity. The history is treated in three books, dealing respectively with "Pagan Thought," "Christian Theology" and "Modern Philosophy". The theoretical part, which is rather shorter than the historical part, is again divided into three books,—entitled "Criticism," "The Thesis" and "The Consequences". The historical account of doctrines is extremely good and impartial, and is full of interest of detail. The same may be said of the critical part. The theological doctrines in particular, in which the author has taken special interest, are treated in such a way as to bring out exactly their philosophical bearing. All that can be attempted here is to give a summary of the author's positive results. The opposition of necessity and freedom, in the shape finally given to it by pagan philosophy, he finds to be: "How can the free-will of man be reconciled with the order established by Providence?" This form of the opposition had only been arrived at after a long development from the doctrine of an absolute fate or necessity, which was common to primitive Greek religion and to early philosophy. The place of freedom in the world was first clearly marked out by Aristotle, who recognised the element of contingency in that which depends on man,—τὸ ἐφ' ἡμῖν: affirming that man is irresistibly attracted towards the good, but allowing him at the same time the power of choosing freely among the means to good. Opposite positions still continued to be taken; but, as the result of the development from Socrates, the "necessity"

of the determinist schools was no longer a material necessity but a rational order. Christianity was on the whole more favourable than paganism to the doctrine of free-will. This is explained partly by its relation to the Jewish law, which, being imperative, supposes the power of choice in man; partly by the character of the Christian doctrine of providence, its substitution of "love" for "pure reason" as the dominant conception. There are in all, it is concluded, five possible positions; and, historically, all these have been held. First there are "the thesis" and "the antithesis," the doctrines of "absolute determinism" (held by the Stoics, Luther and Calvin, &c.) and of "absolute indeterminism" (held by the Epicureans, Pelagius, &c.). Then there is the denial of the possibility of a synthesis. This is the position of some modern men of science, such as Du Bois-Reymond, as well as of some Catholic doctors, such as Bossuet, who insists that we must keep hold of "both ends of the chain"—human freedom and divine necessity—without any attempt to join them. Fourth, there is the "negative synthesis" of the English empirical school, represented by Hume and Mill, who try to get rid of the notions both of free-will and necessity, substituting that of invariable sequence within the limits of observation, and applying it to material and mental phenomena alike. Lastly, there is "the true synthesis," which consists in the denial (permitted by logic) of the two contraries of absolute determinism and absolute indeterminism, together with the affirmation of the "subalternate" propositions, "Something is necessary," "Something is free". The author's method of arriving at this synthesis is first to show, by a criticism of the doctrine of "absolute necessity," that it cannot be proved either on grounds of physical science, of psychology or of metaphysics; then to trace it to its origin in a certain "logical vice"—the tendency of the mind to suppress variety in the search for unity; and then to show, on the other side, that the doctrine of "absolute indeterminism" has its origin in the same logical vice as the doctrine of absolute determinism. The refutation of both these doctrines leaves the affirmation of a limited freedom as the only one logically possible. Free-will, thus shown to be open to no logical objection, is to be affirmed on moral grounds. It is definable as "the power in virtue of which man can choose between two contrary actions without being determined by any necessity"; and the notion of "imprevisibility" is to be asserted, without qualification, as a part of its meaning. The author admits that it is inconsistent with the acceptance of the conservation of energy as "an absolute law, without restriction". In reality, however, this, like all scientific laws, is only "a relative, experimental law," not "absolutely exact," but "nearly and sensibly certain". "It is with a leaden, not with an iron, rule that the plan of things has been traced". In some decisions of the will there is a real indetermination of motives, and the predominance is given to one side by an act of free-will, which must be assumed to proceed from the immaterial soul and to introduce a new force into the world (or to destroy an existing force). Spiritualism, therefore, is the only metaphysical doctrine consistent with the admission of free-will. The decision is made by free-will when there is a conflict between the ideas of "sensible" and "intelligible" or "universal" good; the idea of "universal good" being formed by "the activity of reason," without material organ. The mode of operation of free-will is, by suppressing the inhibition of one motor tendency, to set another tendency free. In his last book, the author contends that the ethical, political and æsthetic consequences of the doctrine of free-will are preferable to those of determinism. It is more favourable, in particular, to the admission of inviolable personal rights. "La seule différence, mais elle est capitale, qui se trouve dans les conséquences sociales qu'on peut logiquement déduire du déterminisme et du libre arbitre, c'est que, seule, la croyance au libre arbitre et à la valeur morale que le monde

acquiert par lui, permet d'opposer à la loi civile une barrière juridique au seuil de chaque conscience individuelle" (p. 553). This seems a little inconsistent with what is said earlier (with special reference to the free-will doctrines of Catholicism and the necessitarianism of the Reformers):—"La nécessité d'une autorité est la conséquence de la croyance au libre arbitre ; la suppression de l'autorité extérieure entraîne comme contre-coup, pour éviter l'anarchie qui menace, la destruction de la croyance au libre arbitre" (p. 132).

U. VAN ENDE. *Histoire Naturelle de la Croyance.* Première Partie. L'Animal. Paris : F. Alcan, 1887. Pp. xi., 320.

This is the first part of a projected work on the origin of mythology and the religious sentiment. Its purpose is to show that "animism"—by which is meant the conception of all things, without distinction of living and not-living, as animated—is "the complex and secondary product of a period already speculative". Man has no primitive impulse to "vitalise" nature. It is in states of consciousness older than animism that religion has its origin. "The animist doctrine"—that is, the doctrine that regards "animism" as the earliest belief of men about natural things—"gives no account of the affective element, which is the true substance of religions, from the simplest beliefs to the most abstract worships". Animism is not the source of the different currents of religious thought, but is their collective result. What may be inferred from observation of children, who do not really confuse the not-living with the living, and of savages, who regard some natural objects as alive but not all, is confirmed by study of the minds of animals. The intellectual currents that have become the source of mythology, as of all human beliefs, "exist already in animality". "The myths of primitive man are only a more advanced and more precise form of their development." Accordingly, the bulk of the present volume is a study of animal psychology, with special reference to the distinction of the living and the not-living and the psychical elements in which religion and mythology, when the level of primitive human intelligence has been attained, may be supposed to have their origin. The higher animals, it is found, as well as man, at first distinguish clearly between that which is alive and that which is not; but, under the influence of the motive of self-preservation, everything living, being a possible source of danger, comes to be attended to more closely than things without life. Thus life comes to be thought of as the only source of motion ; and the way is now prepared for the confusion of the not-living with the living. This confusion is not fully established till the myth-making stage ; but already in animals the first indications of it may be observed. The cause of the extraordinary development in man of "mythogenesis," as of other faculties, was "an external impulse," "a radical change in the conditions of existence of primitive man". To trace the effects of this change will be the object of the subsequent part of the work.

Journal d'un Philosophe. Par LUCIEN ARRÉAT. Paris : F. Alcan, 1887. Pp. 303.

In the form of an imaginary correspondence between two friends, to which a certain unity is given by a "romance" affecting one of them, the author has written a series of reflections on current topics of philosophy, literary and artistic criticism, &c. A large amount of recent psychological and philosophical work is lightly touched upon, and the whole forms an interesting view of contemporary thought, as well as a contribution to it.

Philosophies de la Nature. Bacon—Boyle—Toland—Buffon. Par NOURRISSON, Membre de l' Institut. Paris : Perrin, 1887. Pp. cxix., 263.

The author's purpose is to establish "that there is no solid philosophy

of nature which is not founded on the ideas of the soul and of God," first by a general historical sketch of philosophies of nature (pp. v.-cxix.), then by a series of "monographs" which are to serve as examples to justify the same conclusions (pp. 1-263, "Des idées d'esprit et de matière dans la philosophie de Bacon," "Robert Boyle et l' idée de nature," "Toland, *Panthéisticon*," "La philosophie de Buffon"). Antiquity, he finds, was dominated by the conception *ex nihilo nihil*. The charm is broken, and the true doctrine of creation and the ideas connected with it are made dominant by Christianity. With the revolt of the Renaissance, "Naturalism" reappears. Descartes and the French philosophy of the 17th century again restore Spiritualism, which again disappears in the renewed revolt (inspired by English philosophy) of the 18th century. This time Naturalism displays its frightful practical consequences in the French Revolution. After "the unbridled Materialism of a second Renaissance," the 19th century, at its dawn, was to see again "a philosophy that should take care to harmonise itself with the necessities of practice, and should not disavow the fundamental notions of common sense". In Evolutionism—the Naturalism of the present day—philosophy has again fallen under "the magical and deplorable empire of words". For what are Nature, Evolution and Matter? *Sunt verba et voces* (p. xcv.). Among the "monographs," the analysis of Toland's *Pantheisticon* (pp. 85-196) is not without interest. The following passage, however, with some historical basis, reads rather curiously:—"Toland, qui, dans la rédaction de son *Pantheisticon*, s'était certainement inspiré des traditions maçonniques fort anciennes en Angleterre; Toland devait aussi, par cet ouvrage même, contribuer sans doute à la diffusion de la Franc-Maçonnerie, qu'en 1725 introduisit en France lord Dervent-Waters (*sic*). Et en effet Panthéistes et Francs-Maçons ne sont pas sans se rapprocher par plus d'une affinité" (p. 172). Toland's controversial style, according to the author—who qualifies his ideas as "chimæras," "politically intolerable," "pernicious and miserable diversions"—"va jusqu'à l'invective". M. Nourrisson is, he tells us, "de ceux qui exigent qu'on attache un sens précis aux termes qu'on emploie; qui veulent que les idées que ces mots expriment soient claires; qui surtout demandent aux faits, dans tout ordre de connaissances, la vérification des théories" (Preface, p. i.). After this claim to accuracy, it is disappointing to find Kepler's laws, Galileo's observations with the telescope and Harvey's discovery of the circulation of the blood all assigned to the 16th century (p. 4).

L'Education du Caractère. Par ALEXANDRE MARTIN, Chargé du Cours de Pédagogie à la Faculté des Lettres de Nancy. Paris: Hachette, 1887. Pp. 377.

By "character" the author understands "the sum of the qualities that are presented by two out of the three great faculties of the human soul, the sensibility and the will". Modern education, he holds, assigns too much importance to the intelligence and too little to the character; and one purpose of his present "course of pedagogy" is to make practical suggestions for the improvement of moral education in the home and in the school. Two chapters (iii., iv.) are devoted to consideration of the influence of heredity and of physical temperament on the character; but first M. Martin compares the optimistic theory of Rousseau and the theory of "theological pessimism" as to the natural character of children, deciding that the last is nearer the truth. Children have no natural morality; "the conception of duty as a categorical imperative" being for a long time above their reason. "The natural inclinations of childhood" are divided into three classes: "those that are indifferent from the point of view of

morality ; those that are contrary to morality ; those that morality approves because it finds in them auxiliaries". The character that conduces to success in the struggle for existence, and the character that conforms to the higher moral ideal, are in many respects different. Which character, then, shall parents and teachers strive to produce? This question, it is suggested, may be ultimately insoluble without the assumption of a supernatural order ; but in practice it is partially resolved by the observation that the power of conquering the inclinations, of putting forth energy by an effort of "free-will," is common to both characters. This power, therefore, is to be especially cultivated. The habit of obedience is favourable to the development of energy of will ; but authority must not be all-embracing or too minute, and the space within which the free-will of the scholar can exercise itself should be gradually extended with advancing age.

Science et Psychologie. Nouvelles Œuvres inédites de MAINE DE BIRAN. Publiées avec une Introduction par ALEXIS BERTRAND, Professeur de Philosophie à la Faculté des Lettres de Lyon. Paris: E. Leroux, 1887. Pp. xxxiv., 352.

All those who are of opinion that French thinking never reached a higher level than in Maine de Biran will welcome this important addition to the list of his published works. It consists of six pieces under the following titles : (1) *Rapports de l' Idéologie et des Mathématiques*, pp. 1-22 ; (2) *Observations sur le Système de Gall*, pp. 23-71 ; (3) *Commentaire sur les Méditations de Descartes*, pp. 73-125 ; (4) *Rapports des Sciences Naturelles avec la Psychologie*, pp. 127-288 ; (5) *Notes sur l'Abbé de Lignac*, pp. 289-317 ; (6) *Notes sur l'Idéologie de M. de Tracy*, pp. 319-50. The first is from the period when Maine de Biran still belonged to the ideological school ; the others, falling within 1808-15, were written in his second period—of independent philosophical thought—before he passed into the mystic vein of his last years. It was the *Commentary on Descartes*, which Prof. Bertrand, the editor, wished to study, that first made him apply to M. E. Naville of Geneva, the possessor of Maine de Biran's MSS. M. Naville, who issued a full account of these in 1851, and who himself published in 1859 the three volumes that so effectively supplemented Cousin's four from the year 1834 (ten years after the philosopher's death), gave willing access to the whole mass of the unpublished writings, and it is not without the help of his experience and constant guidance that the present selection has been made. It comes forth as vol. ii. of the "Library of the Faculty of Letters of Lyons," a series of independent volumes now substituted for an earlier yearly publication of papers in history, literature and philosophy. Still more important than the *Commentary on the Meditations* (i., ii., iv.), though that is of great value both intrinsically and for the understanding of Maine de Biran's own development towards his latest phase of thought, is the fourth piece dealing with the relation of Psychology to the Natural Sciences. It is a mere fragment, but has not less interest now than when it was written as a plea for the independent scientific character of pure psychology, and it contains a scientific doctrine of reason and belief that is missed in the *Essai sur les fondements de la Psychologie*, the most finished work of Maine de Biran's pen (issued by M. Naville in 1859). Its relation to the *Essai* is very hard to determine. The conclusion to which M. Naville has finally come is that it dates from 1813, after the *Essai* was practically completed, but, remaining itself incomplete, was passed over when, after a time of political distraction, the *Essai* was taken up again and finally disposed of towards 1815. M. Bertrand had intended to include in the volume the correspondence of Maine de Biran with Cabanis, Ampère, Destutt de Tracy and others, but this has had to be kept back for the present.

La Vie des Sociétés. Par le Dr. A. Bordier, Professeur à l'École d'Anthropologie de Paris: C. Reinwald, 1887. Pp. xv., 359.

The author's aim is to study "the natural history of societies," in the manner in which the growth of a plant or animal is studied. The "physiological laws of the social organism" are to be deduced from the appropriate "documents"; the individual being "considered as a simple anatomical element of the social body and studied successively in the modifications which the number of the similar elements, their structure, their nutrition, their reproduction, their riches or their poverty may cause that organism to undergo". The social organism is then to be studied in its evolution and in the various diseases to which it is subject. Lastly, the right methods of "social hygiene"—or legislation and education—are to be deduced. The "documents" which the author makes his basis are the results obtained by anthropologists and statisticians. These are set forth and discussed in accordance with his biological terminology. By the term "hygiene," he intends to signify the substitution of methods involving as little interference as possible with individual freedom, for the more violent methods of social "therapeutics". This he regards as a reform in politics and education corresponding to the modern reform in medical treatment. The philosophical writers by whom he has been most influenced are Buckle and Mr. H. Spencer.

Opere Filosofiche di Roberto Ardigò. IV. *Sociolgia. Il Compito della Filosofia e la sua Perennità. Il Fatto Psicologico della Percezione.* Padova: A. Draghi, 1886. Pp. 502.

The first three volumes of Prof. Ardigò's collected works were noticed in Mind xi. 291. Of the present volume the largest and most important work is the *Sociology* (pp. 11-252). It may be regarded as a continuation of the *Ethics* of vol. iii. Ethics, in the author's view, is a branch of the science called by Aristotle "Politics," and now called "Sociology" (p. 51). If a distinction between Politics and Sociology be maintained, Prof. Ardigò's work is rather political than sociological; his theory of "the natural formation of justice" being developed not simply with the purpose of historical explanation, but with a view to the construction of a doctrine of political rights and duties. For the explanation of "the natural formation of justice," the general principle laid down is, "No justice without human society" (p. 96). The idea of justice is formed from the experience of a conflict of powers. It becomes determinate in the form of legal duties and rights when the separate powers are brought into equilibrium by a central governing power. To make the formation of such a power conceivable, we must suppose in individuals an impulse, at first indeterminate, towards a social ideal. This "individual consciousness of social ideality" is in its nature "anti-egoistic". When a system of legal rights and duties has been formed by the action of the central power, there appears a conflict between legal right and what is called "natural right". The consciousness of "natural rights" is a consciousness of "social idealities" not yet embodied in positive law. It is this, and not the rebellion of egoistic impulses, that is the motive force of revolutions. Ultimately "positive law" is determined and justified by "natural law," or the law of the ideal state. "Anti-egoistic social ideality," when it has become distinct, is reinforced by the motives that at first gave its strength to egoism. The idea of moral justice, as it grows, is transferred from the act to the intention. The conception of acts of "charity," "beneficence" or "philanthropy," which go beyond what is strictly due, is formed. In the case of acts of strict justice, also, the consciousness of the "sanction," that is, of the force exerted by society to compel the observance of what is just, tends to disappear.

Ideas of "virtue" and "merit" then arise, which imply spontaneity of action and differences between different persons, as regards the degree of spontaneity; the virtue or merit of an action or a character being greater in proportion as there is less direct consciousness of any external sanction. Before the ideas of "positive law," "natural law," "justice," &c., arise in their distinction, there is a general notion of social "fitness" (*convenienza*); and there always remain, outside the kinds of conduct regulated by the central power, other kinds of conduct, to which not the action of the central power, but only a less definite form of the social sanction is applicable. The requirements of the ideal of human society, expressed in terms of the analogy between the social and the biological organism, are: (1) Autonomy of the parts; (2) Prevention of mutual violence; (3) Distinct constitution of the central power; (4) Its constitution by selection of the best, in dependence on the will of the parts, in virtue of their social idealities, and to the end of the protection of the co-ordinated autonomies of the society; (5) Just and stable organisation and subordination of the parts corresponding to the stable and just organisation and efficacy of action of the power (p. 38). To every right corresponds a duty; but every right is not at the same time a duty (pp. 130-1). The right to carry into effect an impulse towards the social ideal is at the same time a duty for the person exercising the right, while the right to exercise egoistic activities is in itself simply a right, though it may imply the duty of other persons not to interfere. Rights at once constitute the social organism and are determined by it (p. 227). The State has for its functions—"the protection of the rights of all," "the acquisition of prosperity," "moral improvement" (p. 249). Thus conceived, it is "the pure and complete realisation of social ideality, or of the principle of anti-egoistic good, of moral good; in a word, of good for the sake of good". From this outline of some of its leading positions the importance of Prof. Ardigò's ethico-political work will be evident. As some account of his psychological and general philosophical point of view has already been given in MIND, less need be said here of the two remaining works of the present volume. It may suffice to mention that the last, on *The Psychological Fact of Perception*, starts from a critical examination of Prof. Sergi's *Physiological Theory of Perception* (noticed in MIND vi. 154), and that the author's own doctrine is that "simple observation . . . gives only pure sensation; for this to become a perception, it must be conjoined with experiment" (p. 345).

FRANCESCO DE SARLO. *Studi sul Darwinismo.* Pp. 186. Also *I Sogni: Saggio psicologico.* Pp. 32. Napoli: A. Tocco & Co., 1887.

The greater part (pp. 5-116) of the first of these pieces is devoted to an exposition of the Darwinian theory of evolution by natural selection and a defence of it against objectors; the author then discusses "Problems started by Darwinism," "Darwinism and Philosophy," "Social Darwinism," "Linguistic Darwinism," "Darwinism and Chemistry," "Darwinism and Astronomy". With all its importance, "Darwinism is not the Alpha and Omega of science," and "much less can it be the foundation of a philosophy. Philosophy and Darwinism are ideas that are perfectly separate but do not oppose one another. Not so Darwinism and Theology; for dogma and research, science and faith, are ideas that absolutely exclude one another." There can be no "social Darwinism". Social progress is not essentially the result of a struggle, but of intelligence; the various forms of social rivalry being "simple stimuli". Physical, chemical and astronomical phenomena are not made clearer by attempts to explain them as cases of natural selection. They are the expression of more general laws, into which the idea of a utility to be served does not enter. It is incorrect, for

example, to speak of a "struggle for existence in heaven"; for there is nothing observable in the positions of the heavenly bodies of the nature of an end to which some are conformable and others not. The short study of Dreams, by the same author, starts from the theory of Delboeuf that all past experience is preserved, and that everything in dreams can be explained by the reappearance of memories of experiences forgotten in waking life. This theory, however, is insufficient, the author contends, unless a reason can be given why particular memories are selected rather than others. He finds the required explanation in the suppression of volition and the predominance of emotion, which, in dreams, acts as "the condenser of experiences". Dreams are "the natural lyricism of life". From this follows the prophetic character of some dreams and presentiments. The disturbing action of the self-interested motives characteristic of volition being removed, ideas of desired or dreaded events are free to group themselves in their true relations. The apparent fulfilment of a dream or presentiment may also in some cases be an illusion. For it is a law of emotion that heightened and depressed states of feeling tend to alternate; and thus a dream may be expressive of the mood that contrasts with that which has been experienced immediately before it in waking life, and the events occurring after the dream may be seen through the medium of this (still continued) "consecutive emotion".

Prof. Giovanni Cesca. *La Teorica della Conoscenza nella Filosofia Greca.* Verona-Padova: Drucker e Tedeschi, 1887. Pp. 66.

The general conclusion of this history of the theory of knowledge in Greek philosophy is that on the whole no important results were attained either as regards the nature, origin or validity of knowledge, because theory of knowledge was not studied "*ex professo* and independently," but continued to be dependent on and limited by metaphysical and ethical theories. As regards the question of the origin of knowledge, the author makes an exception in favour of the Stoics, who, he holds, combined the truth that is in sensationalism with the truth that is in nativism, by their acceptance of an empiricism modified by the recognition that perception is not a mere affection of sense caused by external objects, but involves an activity of the mind. As regards the nature and validity of knowledge, Greek philosophy in general remained essentially dogmatic, in the spirit of the early physical schools; while its sceptical doctrines ended in absolute nihilism. An exception to this judgment is made in favour of the "phenomenalism" of Ænesidemus, who had the merit of seeing that knowledge is not adequate to the object, but is relative to the knowing subject, "so that we know only our representations, that is, phenomena, and never their substratum, that is, things-in-themselves". "This doctrine, however, is entirely isolated and was not recognised in its importance and extension, but only served a practical aim, so that, in spite of the just conceptions of the Stoics and of Ænesidemus, we may conclude that Greek philosophy in general neither succeeded in making an important and valid contribution to the formation of Epistemology, nor in explaining the nature, origin and validity of knowledge."

I Problemi della Filosofia della Storia. Prelezione letta nella Università di Roma, il 28 Febbraio, 1887. Dal Prof. A. Labriola. Roma: Loescher, 1887. Pp. 45.

In this inaugural lecture, delivered by him on assuming temporarily the post of Prof. Barzellotti, now transferred to another university, the author states his general view of the Problems of Philosophy of History. He insists, against those who wish to consider history as one of the natural

sciences, on the distinctions of its subject-matter; pointing out, for example, the impossibility of inferring from the physical characters, such as the form of the skulls of the Mediterranean races, the character of a product such as Greek art (pp. 20-1). Philosophy, he says, has the right to protest against the exaggerations of a doctrine that regards history as determined simply by external needs, just as it had the right to protest against the exaggerations of the opposite doctrine of a spirit acting by mere internal impulse and making its way unaffected by obstacles (pp. 41-2). He criticises the ideas of progress and of the unity of history, and contends for an "epigenetic" as distinguished from an evolutionary view of the origins of civilisation.

Ueber das Schöne. Analytische und historisch-kritische Untersuchungen. Von Dr. JULIUS BERGMANN, ord. Professor der Philosophie an der Universität zu Marburg. Berlin: E. S. Mittler und Sohn, 1887. Pp. 201.

Before proceeding to the historico-critical studies that form the greater part of this volume, the author defines with extreme care the nature of æsthetic emotion. His principal conclusions are these. A pleasure, to be æsthetic, must be a pleasure felt in mere contemplation. What is contemplated may be either a perception, or an imagination, or a state of subjective feeling aroused by a perception or imagination. A beautiful object may have a worth for feeling independent of mere contemplation; in order to recognise its beauty, an intellectual process may be necessary: but the æsthetic pleasure is something distinct, though perhaps not separable, from any other value of the object for feeling; and the subsidiary intellectual process is not to be regarded as itself æsthetic, because it is necessary to the existence of the æsthetic pleasure. Beauty is subjective; that is, a thing or a phenomenon is beautiful for a subject contemplating it, and not in itself apart from every possible subject. From the doctrine that beauty is something residing in an absolute object—the doctrine of the "speculative" or "cosmological" systems of post-Kantian æsthetics—is to be distinguished Herbart's doctrine of the "objectivity" of beauty, which is a psychological theory, not inconsistent with the doctrine of its "subjectivity" in the author's sense. Such a view, and in particular the doctrine that beauty is subjective, the author regards as the result finally attained by the movement of æsthetics in Germany since Kant. The cosmological point of view has now, as he puts it, been replaced by the psychological point of view, which may henceforth be regarded as a common possession. The problem of æsthetics is recognised as being to determine the nature and conditions of æsthetic enjoyment, not the nature of the beautiful as it is in itself. The principal æsthetic writers discussed in the historical part of the book are Kant, Herbart and Schopenhauer. The critical examination of their conclusions is made the basis of further analysis.

Die drei metaphysichen Fragen nach Immanuel Kant's Prolegomena zu einer jeden künftigen Metaphysik, die als Wissenschaft wird auftreten können beantwortet von F. V. VON WASSERSCHLEBEN. Berlin: C. Duncker (C. Heymons), 1887. Pp. vii., 115.

The author has proposed to himself to construct a metaphysics in the sense of Kant's *Prolegomena zu einer jeden künftigen Metaphysik*, on the basis of modern science. The writers from whom he has received most influence are, as he mentions, F. A. Lange and Prof. Wundt. He proceeds to ask the answer, on scientific grounds, to each of Kant's three questions; taking the three "Ideas," the Psychological, the Cosmological and the Theological, or Immortality, Freedom, God, in the order given. "The

original ground of all things," according to modern science, is found to be "force". Matter and consciousness are the same in essence, both being alike manifestations of force; but the law of psychical force is different from the law of physical force, being (as stated by Prof. Wundt) a law of constant increase instead of a law of equivalence. Human consciousness is the result of a process of development out of matter. "The soul is nothing substantial or enduring, and the identity of the Ego is only an apparent identity." What is permanent is the structure of the organism. On the ground of science, therefore, personal immortality must be denied. The antinomies that spring from the Cosmological Idea are due to neglect of the distinction between "material" and "psychical" force and (consequently) causality. Man, as regards his body, is subject to natural laws; but through the presence in him of spirit he is a cause of the beginning of motion, and is free in so far as he is not under the dominion of impulses from his lower nature. The human will is determined by the divine will; in which alone necessity coincides with freedom. Passing to the Theological Idea, the author finds that the conception of a "world-consciousness" is a necessary conception. For "the history of nature is the history of the progressive victory of spirit over matter"; and this supposes a directing intelligence. A complete world-consciousness, however, can only be posited at the beginning and at the end of the world-process. That the motion of matter will terminate and the world-process have an absolute end, follows from the law of the degradation of all forms of energy into heat. On the other hand, "everything living springs from life; the inorganic springs from the organic and has been formed by vital activity". Matter is the "bound," spirit the "free," force. If, then, we proceed from consciousness as the more certain, we must assume that the free world-consciousness has bound itself by laws willed by itself. Force, therefore, originally present as world-consciousness, transformed itself into the unconscious or matter for the sake of an end proposed to itself, and will again emerge from the world-process as world-consciousness. "In the beginning was God, and nothing outside Him. God has transformed Himself into the world, and the world will again return to itself in God." "The world-process is a struggle of the unconscious with itself according to natural laws willed by God before the beginning of Creation." The purpose of the transformation of the unity of the world-consciousness into separate single beings by the intermediate stage of the unconscious or matter, was an intensification of mental force. The only other purpose of the world-process that can be known by us is the storing up of memories of a world-history for the sake of the future complete world-consciousness. For although individual memory disappears at death, "the unconscious memory of Nature is true and ineradicable"; and the memories of all the states of consciousness of all individuals are preserved, to reappear at "the new birth of the spirit," when all shall again "live in God". Ethically, all actions are to be estimated by their relation to the world-process. To promote this is "the divine command," which is identical with "the well-understood interest of man". "Sin is what opposes and prolongs the world-process."

Abendröte. Psychologische Betrachtungen. Von Paul Lanzky. Berlin: C. Duncker (C. Heymons), 1887. Pp. 134.

This book is composed of a series of detached "thoughts," arranged under twelve heads, on life, philosophy and art. It purports to be written by a once pessimistic thinker, who has become reconciled to human life by retiring into solitude, yet without wishing again to leave his solitude; for by withdrawal from the world he has both recovered from misanthropy

and learnt to be self-sufficing. The single reflections are often very suggestive, and have always a stamp of individuality. So far as the book conveys a general view of life, it is summed up in the motto from Montaigne which is placed on the title-page:—"La plus grande chose du monde, c'est de sçavoir estre à soy," and in a "thought" of Leopardi (from whom the author has taken the motto of one of his twelve chapters):—"He who communicates little with men is rarely a misanthrope. True misanthropes are not found in solitude, but in the world. . . . And if one who is such retires from society, he loses in retirement his misanthropy" (*Pensieri*, lxxxix.).

Die Willensfreiheit des Menschen. Von. Fr. J. Mach, k.k. Professor am Staats-Obergymnasium in Saaz. Paderborn u. Münster: F. Schöningh, 1887. Pp. ix., 274.

The author seeks to establish the doctrine of free-will, not by deduction from principles, but "on the real basis of concrete inductive facts". Thus "science and life, theory and practice, psychology and practical moral interests" are to be reconciled, and the right of punishment exercised by society and the State to be justified. From the proof, to be given afterwards, that animals have no free-will, the falsehood of Materialism and of the philosophy of Schopenhauer is to be inferred. The distinction of kind between men and animals will thus be maintained; and the proof of the free-will of man will gain its full evidence. The experience on which the doctrine of free-will is to be based is "internal experience"; but first the author sets out to refute the doctrines he regards as false. His preliminary positions are that "freedom is not absolute indeterminism," and that "freedom is not absolute determinism". He examines at considerable length (pp. 35-111) the various forms of determinism, *viz.* (1) "External determinism" (the theological predestination of Luther, Calvin and Wycliff, and the determinism of Spinoza); (2) "Mechanico-physical or materialistic determinism" (Büchner, &c.); (3) "Internal or mechanico-psychological determinism" (Leibniz, Herbart); (4) "Metaphysical or pantheistic determinism" (Schelling, Hegel, Hartmann). All these doctrines are incompatible with "the feeling of repentance, the fact of conscience, moral responsibility". The true doctrine of freedom is that of "relative indeterminism" or of a limited power of free choice (pp. 112-150). In the remainder of the book, objections are replied to (pp. 150-70), and the positions are defended at length—(1) that "true freedom is moral freedom" (pp. 171-203); (2) that "responsibility is a consequence of human freedom" (pp. 204-21); (3) that "free-will does not belong to animals, but only instinctive activity" (pp. 222-40). There is an historical appendix (pp. 241-74) tracing the problem of free-will from antiquity to modern times. The true doctrine of free-will, the author contends, first became possible in the Christian era (pp. 249-50); and in his historical section, as elsewhere, he is careful to point out that there is no incompatibility between the doctrine of a limited free-will and the Scholastic doctrine, represented above all by Thomas Aquinas, that the will is necessarily determined to strive after "good generally" or "happiness" (pp. 256-7 and 140-4).

Reproduction, Gefühl und Wille. Von Dr. Richard von Schubert-Soldern, Privatdocenten der Universität Leipzig. Leipzig: Fues (R. Reisland), 1887. Pp. xv., 135.

The aim of this book, as stated by the author, is to show how "feeling"—that is, "pleasure and pain"—is the determining factor of all thought and action. Like his other works, it has in view "the analysis of the immediately given"; for this, he holds, must in any case precede metaphy-

sics—if metaphysics be supposed possible. Starting from the distinction arrived at in his *Grundlagen einer Erkenntnisstheorie* (see MIND x. 310) between the point of view of "natural science" and the point of view of "psychology," he shows that as the body is the centre to which everything belonging to the external world or the world of perception appears as in relation, so feeling is the centre for the relations of the internal world or the world of representation. Through the body, itself a group of perceptions, all perceptions are mediately in relation with the internal world, and so with feeling. Feeling, which appears on the one side as determined by reproduction of presentations, on the other side determines it. With feeling, desire and volition are inseparably bound up. The work, accordingly, falls into three divisions, dealing respectively with Reproduction, Feeling and Will, which are subdivided as follows:—Section i. c. 1, "Reproduction," 2, "Association," 3, "Abstraction and Reflection"; Section ii. c. 1, "The Life of Feeling in general," 2, "The Life of Feeling in particular"; Section iii. c. 1, "Necessity," 2, "Wish and Will," 3, "Free-will". Nearly all psychical phenomena, in the author's view, can be partially explained by the recognised laws of association; but associationists have neglected feeling, which, though it does not itself associate ideas but only directs and strengthens associations, is yet of the greatest importance (p. 26). Abstraction, again, cannot be fully explained by resemblance and more frequent repetition in consciousness of certain representations. For complete explanation, it has to be seen that the representations to which the strongest feelings of pleasure and pain are attached come into the foreground, and that thus attention directs itself to these and they are most strongly distinguished. Ultimately, every intellectual as well as every volitional process is to be explained by reference to pleasure or avoidance of pain, which alone has "value". "Necessity" is reduced psychologically to a form of expectation; "physical necessity" being defined as the expectation of future perceptions in accordance with past perceptions, "psychical necessity" as the expectation of future representations and feelings in accordance with the past. In the last chapter the author contends that "freedom of choice," without "freedom of will," is a sufficient basis of moral responsibility.

Geschichte der Ethik. Darstellung der philosophischen Moral-, Staats- und Social- Theorien des Alterthums und der Neuzeit. Von Dr. KARL KÖSTLIN, o.ö. Professor an der Universität Tübingen. Erster Band: Die Ethik des classischen Alterthums. Erste Abtheilung. Tübingen: H. Laupp, 1887. Pp. xii., 493.

This promises to be a very full history of ethical and political theories in ancient and modern times. It is called a "History of Ethics"; but, as the author tells us, he understands by "Ethics" not merely the science of morality, but the whole of practical philosophy, including, in particular, the philosophy of society and the State (p. 6). The present volume takes in the pre-Socratics, the Sophists and Socrates, Plato and the older Academy. The exposition of doctrines is preceded by a general introduction on practical philosophy, its subject-matter, its methods and its divisions (pp. 1-115), and by a special introduction on the character of Greek Ethics and its sources in Greek life (pp. 119-159). The three chief questions that practical philosophy must ask are found to be: (1) What are the ends of human action? (2) What are its laws? (3) What are the conditions of the realisation of human ends and laws? A principal point of the last investigation is to determine the real objective order to be given to the collective life of men in order that the ends and laws of man may be realised. Ancient and modern Ethics are to be specially studied, because

it is only in ancient and modern times that the attempt has been made to work out a practical philosophy on purely philosophical grounds. The Ethics of classical antiquity has permanent interest (1) because, scientifically, it created moral, social and political philosophy, and stated all possible views of the end of life, (2) because of its "ideal direction". Its idealism consists in its telling men to seek as their end both personal perfection and the perfection of the political society in which they live. This idealism, however, has a "naturalistic element"; perfection being held to consist entirely in the unfolding of natural dispositions. The recognition that the highest end of all is conformity to a binding "moral law" is absent. Hence ancient Ethics, in its view of the destination of man, has not attained complete "spirituality". Christianity, deriving the conception of moral law from Judaism, replaced ancient "naturalism" by "spiritualism". In the Middle Ages, spiritualism was exaggerated into a dualism that placed the spirit in antagonism to reality. In modern times, the real regained its rights; and at the same time there has been a constant effort to reconcile ancient naturalism with Christian spiritualism. All the branches of practical philosophy have also been studied more thoroughly and completely, "so that now for the first time a true philosophy of human things, of human interests and human ideals as a whole, has been created".

Ueber die wahren Ursachen. Eine Studie von Dr. S. STRICKER, Universitäts-Professor in Wien. Wien: A. Hölder, 1887. Pp. 60.

This investigation of what is meant by "cause" was started by Hume's doctrine of causality, and proceeds on the basis of the psychological results arrived at by the author in his *Studien über die Bewegungsvorstellungen* (1882), here briefly recapitulated. The perception of motion, he concluded in the former work, cannot have been acquired by the fusion of mere passive sensations, but always depends on a determination of action or incipient action of muscles. In volition, muscular movement follows immediately upon innervation of motor nerves, and is felt as in direct quantitative relation (though not strictly proportional) to the intensity of the felt innervation that precedes it. It is to this type that all motion is primitively referred. External motions, since their perception is involuntary, are referred to a will external to that of the percipient; those that do not proceed from other men or from animals being referred to invisible living beings. For will, physical science substitutes "force," which is merely will depersonalised; and, by a speculative extension of the conception of force, the apparently spontaneous beginnings of action in volition are themselves traced back to pre-existing forces. The search for causes, therefore, is grounded in our internal experience. It is not to be explained, as Hume explains it, by observed customary conjunctions of events in the external world; but is the reference of an event which, as soon as perceived, determines in us motor feelings, to the type of the production of such feelings which exists in ourselves. And in any particular case we seek the true cause of an event either by active experiment or by comparison with previous active experiments of which we possess the results in the form of the "potential knowledge" that constitutes "common-sense": we do not simply call any customary antecedent the "cause" of its consequent. A "true cause" is the "origin" or "source" of matter or motion ("Ursache" = "Ursprung" or "Urquelle"). As the "cause" of any particular portion of matter is that portion of matter pre-existing somewhere else, so the "cause" of the force or motion possessed by any portion of matter is that same quantity of force or motion possessed by some other portion of matter. The law of causality is therefore identical with the "law of conservation" of physics. (The author promises to defend, in a second part of

the Study, his use of the term "force" or "motion" in preference to "work" or "energy".) The character of the law of causality or conservation is that which Kant says would belong to it if drawn from experience; that is to say, it has only "empirical universality" and not "necessity"; although the absence of the character of necessity does not follow, as Kant holds, simply from the experiential origin of the law.

Probleme der Lebensweisheit. Betrachtungen von JÜRGEN BONA MEYER, Zweite Auflage. Berlin: Allgemeiner Verein für deutsche Literatur, 1887. Pp. vi., 369.

This volume opens with a collection of proverbs, of various nations, relating to the training and education of children (i. "Erziehungsweisheit im Sprichwort"). The author then goes on to discuss some of the questions suggested in his opening study; proceeding from discussions of "Play" and of "Natural Disposition and the Choice of a Vocation" to consideration of the differences between Genius and Talent and the training of the Imagination and the Memory. Essays on questions of casuistry and on the different types of moral systems are followed by a series of essays (ix.-xiii.) in which the author opposes the pessimism of Schopenhauer and Hartmann and seeks to substitute for it a moderate optimism, both as regards the individual life and the future of the race.

Die Geistesthätigkeit des Menschen und die mechanischen Bedingungen der bewussten Empfindungsäusserung auf Grund einer einheitlichen Weltanschauung. Vorträge von J. G. VOGT. Mit erläuternden Holzschnitten. Leipzig: M. A. Schmidt, 1887. Pp. 140.

This is an interpretation of the facts of psychology in the interests of a materialistic view of the world. The author's materialism is, however, modified by the positions (1) that we do not know what matter is in itself; (2) that every atom has an element of feeling attached to it, and that it is out of the combinations of these feelings that intellect arises. Nature has an end that is not to be expressed in anthropomorphic terms. The end for which living beings are evolved is neither happiness (as the pessimists think it ought to be) nor knowledge (as idealists imagine), but simply "orientation" in the system of things; the brain being the great "organ of orientation". Idealism is an expression of the arrogance of man; but this arrogance is an artifice of Nature devised to intensify man's energy; for a belief that he is at the summit of things furnishes him with a powerful motive to action. Hence the majority will always be favourable to idealistic doctrines. A few see through this illusion, "descend from the mock throne of the Ego," and make their brain-mechanism a mirror of the mechanical processes of the real world. "This mirroring of the mechanical world-process in our brain is indeed an imperfect, a fragmentary one. It will be complete and all-revealing only in the world-intellect that develops itself out of the whole fundamental scale of feeling, in which accordingly the mechanical process will be able to mirror itself in all its modalities."

Hegel's Offenbarungsbegriff. Ein Religionsphilosophischer Versuch von Dr. JOHANNES WERNER. Leipzig: Breitkopf & Härtel, 1887. Pp. 90.

A critical exposition of Hegel's conception of "revelation," more especially in its religious sense. The author finds that the true heirs of Hegel's thought were neither the Right nor the Left, but the Centre, represented by those who, like Vatke and Zeller, have not slavishly followed the master but have worked independently from his point of view.

Zur Psychophysik des Lichtsinns. Von HJALMAR NEIGLICK. ("Separat-Abdruck aus dem, Anfang März erscheinenden, Bd. IV., Heft 1, der *Philosophische Studien*, herausgegeben von WILHELM WUNDT.") Leipzig: W. Engelmann, 1887. Pp. 84.

These psychophysical researches, on the sense for degree of intensity of light, made by the "method of contrasts" so largely employed by Delboeuf, have yielded the following results:—"(1) In some cases a geometrical series of physical stimuli corresponds, as the law of Weber requires, to the arithmetical series of differences of sensation: this geometrical series of stimuli then calls forth a series of reciprocal contrasts of equal intensity; (2) in other cases, and indeed the most, the law of Weber does not apply: but in those cases contrasts of equal intensity correspond to no geometrical series of stimuli" (p. 73). The concluding pages are occupied with an attempt to fit these results "into the frame of familiar psychological facts".

RECEIVED also:—

A. H. Sayce, *Religion of the Ancient Babylonians* (Hibbert Lectures). Lond., Williams & Norgate, pp. 558.

S. Bryant, *Educational Ends, or the Idea of Personal Development*, Lond., Longmans, pp. 292.

L. Johnstone, *A Short Introduction to the Study of Logic*, Lond., Longmans, pp. 250.

A. Stöckl, *Handbook of the History of Philosophy.* i. *Pre-Scholastic Philosophy* (trans. T. A. Finlay), Dublin, M. H. Gill, pp. 285.

S. Drey, *Herbert Spencer's Theory of Religion and Morality*, Lond., Williams & Norgate, pp. 17.

E. Pluzanski, *Essai sur la Philosophie de Duns Scot*, Paris, E. Thorin, pp. 296.

J. Simon, *Victor Cousin*, Paris, Hachette, pp. 184.

O. De Sanderval, *De l'Absolu*, Paris, F. Alcan, pp. 211.

J. Delboeuf, *De l'Origine des Effets curatifs de l'Hypnotisme*, Paris, F. Alcan, pp. 42.

A. de Bella, *Prolegomini di Filosofia elementare*, 3a ed., Torino, L. Roux, pp. 176.

R. Sommer, *Locke's Verhältniss zu Descartes*, Berlin, Mayer u. Müller, pp. 63.

J. Raffel, *Die Voraussetzungen welche den Empirismus Locke's, Berkeley's u. Hume's zu Idealismus führten*, Berlin, Mayer u. Müller, pp. 46.

J. Gavanescul, *Die pädagogischen Ansichten Locke's in ihrem Zusanmenhang mit seinem philosophischen System*, Berlin, G. Schade, pp. 84.

M. Lazarus, *Treu u. Frei: Gesammelte Reden u. Vorträge über Juden u. Judenthum*, Leipzig, C. F. Winter, pp. 355.

H. Romundt, *Die drei Fragen Kant's*, Berlin, Nicolai, pp. 64.

E. v. Schmidt, *Begriff u. Sitz der Seele*, Heidelberg, G. Weiss, pp. 76.

F. Wollny, *Grundriss der Psychologie*, Leipzig, T. Thomas, pp. 121.

NOTICE will follow.

VII.—NOTES.

A REMARKABLE CASE OF AMNESIA.

It is by no means a new observation that in case of cerebral concussion the resulting unconsciousness is found sometimes to involve a complete loss of memory for a period, greater or less, before the accident; but the fact is so curious that, pending any likely explanation, it is well to put on record thoroughly well attested instances as they happen. A psychologist of Prof. Bain's eminence has recently had the misfortune to have such a psychological experience, of which he gives the following account:—

"On the 23rd October last I rode out on horseback. The horse stumbled and fell. A labourer in an adjoining field saw the fall; on running up, he found me overlaid by the horse, and dragged me out insensible. I was taken to the adjoining farm-house, and was found to have sustained various injuries, the worst being a bad dislocation of the right shoulder. The insensibility continued upwards of three hours, during which time the shoulder was set without pain or knowledge. When consciousness returned, the memory of what led to the accident was discovered to be completely obliterated. In fact, the loss of memory extended to a full hour previous, and it has not yet been recovered. In no other respect did the concussion leave any permanent injury to the mental faculties."

Prof. Bain was found on a different road from that which he remembers he, more than an hour earlier, intended to take on his way home. He must have changed his mind; but of the change, as of all that followed upon it till the time of the accident, he has as little recollection as of the hours he lay unconscious. It was not a very long period of unconsciousness, nor is the lapse of memory—for a single hour or so—very extensive. That there may possibly be some relation between the length of the two periods in cases of the kind is suggested by the facts of another case which I have later had the opportunity of verifying with the utmost care, and which are certainly so remarkable in themselves as to deserve henceforth to rank as 'the first instance' of their class.

On the 27th September last year, at Belper, in Derbyshire, the Hon. F. Strutt was thrown from a dog-cart, which he had suddenly to pull aside against a pavement in order to escape collision with a cart meeting him. He was driving three other people at the time, and was by them seen to fall on his right side. What followed as he lay on the ground is uncertain; but, however caused, the result of the accident was extensive fracture of the base of the skull, shown by copious bleeding from the right ear and from the nose. Though, externally, there was only some blackness round the left eyelid, and slight abrasion of the skin on the left side of the face, the nerves on that side were so deeply injured that, besides loss of common sensation at first, sight and hearing (of left eye and ear) have perished; also, the hearing of the right ear has been affected. Mr. Strutt was taken up unconscious, and in such a state of collapse that for some time death was hourly expected. After some days, nourishment in liquid form began to be taken, and thenceforth his strength was maintained, but he continued unconscious. It was not till the beginning of February, after four months' interval, that he 'came to himself' again, having for some days previously begun to show signs of returning sense. At a much earlier stage, some four weeks after the accident, he was thought to be recovering consciousness, but he had then a serious relapse; being afterwards moved first from

Belper to his mother's house in Nottinghamshire and then, towards the end of January, to London, before the recovery took place. It was gradual. In the course of January he seemed to recognise his mother, who had nursed him all through, and later on external things began to affect him now and again in a more or less determinate way. About the end of the month, he had some experiences—which he calls and remembers as dreams—that evidently were his first definite apprehension of the people and things about him, overlaid with fantastic representation. From the beginning of February his perception became more and more clear and his language sensible, till in the second week he could, as he says (being an eager politician), have told the names of all the members for Derbyshire. But then it was found that he had lost all memory not only of the accident, but of the events of some days before. The accident was on a Monday, and he had perfect recollection of where he had been and what he had done up to the morning of the previous Monday; from that time onwards he could recall nothing. The week had been an unusually busy one, full of incidents that he might well remember; and, as it happened, he wrote a letter to his mother on the day before the accident, detailing the events of the previous days. I have seen this letter, and it is possible from it and from other written records to make out the exact history of the week. He sold some cattle, and paid the money into his bank; heard one afternoon a lecture given by a friend to an archæological society, and entertained the members afterwards at his house; attended a public concert; presided at a meeting for University-extension; wrote, printed and sent out an important circular to a number of Boards of Guardians; took the chair at a public supper; spoke at a great political demonstration; received family intelligence that particularly interested him; and finally, just before the accident, was engaged in the transaction of business of quite special importance to himself. Of all this and more, everything has clean vanished from him; except only that he imagines he has some faintest reminiscence of a dark woman singing and of a number of people on a lawn—but not till after reading his letter which mentions the one and suggests the other. About the cattle (not mentioned in the letter) he inquired in the second week of February, remembering that he had wished for some time to sell them, but having no suspicion of the actual sale some seven days before the accident.

The facts could not be more exactly ascertained, and the present object is only to put them on record. I am unable, where now writing, to compare them with the particulars of other recorded cases, a number of which (according to M. Ribot) are to be found in the *Dictionnaire encyclopédique des Sciences médicales*, art. "Amnésie," by J. Falret, besides one (similar in character to Prof. Bain's) in Carpenter's *Mental Physiology*, p. 450. I have heard privately of one case where, the unconsciousness being limited to a few minutes, the lapse of memory extended to only two or three minutes before the accident that caused it: which is further confirmatory, so far as it goes, of the notion that the length of the unconscious period may somehow determine the extent of the amnesia. On the other hand, there are certainly cases where, upon recovery of consciousness, the circumstances of the accident do not fail to be remembered.

EDITOR.

MILL'S DOCTRINE OF NATURAL KINDS.

I am glad that Mr. Towry has stated this question in the last number of MIND, because I think his Note goes far to show that Classification is out of the province of Logic altogether. It is impossible, I believe, to

classify objects in a manner likely to prove of general use without a competent knowledge of these objects and their properties. Certain logicians may possess this knowledge, but if so it is not by their logical researches that they have acquired it. Other logicians who have confined their attention more especially to their own science do not possess it, and I do not believe that general directions as to Classification given by a man who has no special knowledge of particular objects are likely to be of much use to the man who possesses the information which his adviser lacks.

Mr. Towry raises an important issue by his fourth objection. "Are there," he asks, "in nature, classes clearly marked off from each other, classes that ought to be sought for by us?" I recognise fully the importance of the inquiry, but as a logician, and a logician only, how am I to answer it? Does the law of gravitation hold good in the solar system only, or does it extend to the region of the fixed stars? is likewise a very important inquiry; but is it one that a logician can be reasonably expected to answer? And in like manner the question, Are there Natural Kinds or not? is in my opinion clearly one which the physicist, not the logician, is called upon to answer. Then as to the answer, physicists are not agreed. Darwinism is now in the ascendant, but it cannot be said to have been universally accepted. According to this doctrine there are no such things as Natural Kinds separated from each other by impassable barriers; and whenever the line of demarcation between what I may call two adjacent kinds appears to be impassable, it is only because the intermediate members have perished in the struggle for existence. This, at least, is the current doctrine as regards the organic world. As regards the inorganic world, the doctrine of distinct chemical elements separated from each other by impassable barriers (at least so far as the *simple* elements are concerned) is still the current one; but many persons are prepared to accept Mr. Lockyer's theory, that the supposed simple chemical elements are all allotropic forms of hydrogen. Mill would probably have treated coal, plumbago and diamond as different Natural Kinds, but they are different forms of carbon, passing into each other under known physical conditions. He would probably have also treated heat, electricity and motion as distinct Natural Kinds, each possessing its own laws, but they can all be converted into each other by known processes. At all events, if Mill would not have treated these things as distinct Natural Kinds, he would have rested his refusal to treat them as such on purely physical grounds.

Physically, it may be true that if a number of objects agree in certain qualities, we can predict their agreement in certain other qualities; and the physicist may also believe with confidence that this agreement extends beyond what he has as yet discovered and that new points of agreement at present unknown will be discovered hereafter. But what right (as Mr. Towry very properly asks) has the logician to assume that any two objects agree in more respects than those in which they are known to agree? It is not for him to anticipate physical discoveries, and discoveries which it is quite possible may never be made.

I do not concur with everything that Mr. Towry lays down in connexion with this subject; but I concur with him (if, indeed, he is disposed to go that length) in thinking that the doctrine of Natural Kinds, whether true or false, is entirely out of the province of Logic, and also in thinking that the doctrine in question has not been substantiated on satisfactory physical grounds.

To avoid misconception, however, I add, that as judgments or propositions usually contain assertions about classes, the logician is bound to explain briefly what classes *are*. But the problem of Classification is not to explain how men in fact classify objects, but how they can classify them

most advantageously, either with a view to investigating their properties or with a view of communicating the knowledge of their properties to others. I do not believe that general rules laid down for this purpose by a logician who is not a specialist will prove of any use ; while, if the logician is a specialist, his rules will probably be found useful only in the particular subjects to which he has devoted his attention, and even there may require considerable amendment, as the science advances. I have no faith in rules for classification laid down by a logical Jack-of-all-trades and master of none. This would not, indeed, be a true description of Mill, who was undoubtedly a master in certain departments, but I fear his example has given too much encouragement to a kind of (so-called) Logic which refuses to rest solely on the laws of Mind, and yet does not require a complete knowledge of the laws of Matter. A Logic on the basis of Mill's system, written by a man who had thoroughly mastered all the latest developments of Mathematics, Physics and Psychology, would be a most valuable work, though no doubt destined to be superseded hereafter when these sciences were more advanced. But who is to write it ? And as the sciences are advancing with rapid strides in all directions, what prospect is there that we shall ever possess a logician who is thoroughly acquainted with them all ? Mill's criticisms on the wave-theory of light are sufficient to show that there was at least one trade in which his position was that of a mere Jack, though a very logical Jack.

W. H. S. Monck.

The Aristotelian Society for the Systematic Study of Philosophy (22 Albemarle Street, W.).—At the business meeting, June 6, the Report of the Committee and Program for the following Session were adopted. The Officers of the Society were re-elected. The first meeting of the next (the ninth) Session is fixed for Monday, Nov. 7, at 8 P.M., when Mr. Shadworth H. Hodgson will deliver the Presidential Address,—subject : "The Unseen World". Two evenings in the course of the Session will be devoted to the reading and discussion of short papers by various contributors on some subject fixed beforehand, the papers having been previously circulated among the contributors, so as to give the discussion the form of a "symposium". The *Abstract of Proceedings* for the Eighth Session, including the Report, List of Members, &c., and edited by Professor Wyndham R. Dunstan, V.P., has now appeared. Non-members may obtain copies, as well as Program-cards for the Session, by application to Mr H. W. Carr, Hon. Sec. [The Society is to be congratulated on its first official publication. It runs to 43 pp. The abstracts of papers read, furnished apparently by the writers, differ considerably in length, and in some cases give a very adequate notion of the arguments. Their subjects—somewhat too varied in character to be easily remarked upon here—have all been recorded in previous Nos. of Mind.]

The Journal of Speculative Philosophy.—Vol. xx., No. 3. The Divine Pymander of Trismegistus (ii.). W. James—The Perception of Time. Hegel—Philosophy of Religion (trans.—Introduction completed). J. M. Long—Classification of the Mathematical Sciences. The Concord Summer School of Philosophy in 1887 : Course of Study in Aristotle, and Bibliography.

Revue Philosophique.—An. xii., No. 7. C. Seignobos—Les conditions psychologiques de la connaissance en histoire (i.). E. Durkheim—La science positive de la morale en Allemagne : i. Les économistes, les sociologistes et les juristes. J. M. Guardia—Les sentiments intimes d'Auguste Comte, d'après son testament. P. Tannery — Le monisme de Mélissos.

Analyses et Comptes-rendus (P. Carus, *Monism and Meliorism;* E. Saltus, *The Anatomy of Negation*, &c.). Rev. des Périod. No. 8. E. Durkheim—La science, &c. ii. Les moralistes, M. Wundt. A. Binet—Le fétichisme dans l'amour : étude de psychologie morbide (i.). C. Seignobos—Les conditions psychol., &c. (fin). H. Neiglick—Rapports entre la loi de Weber et les phénomènes de contraste lumineux. Analyses, &c. (J. Dewey, *Psychology*, &c.). Rev. des Périod. Soc. de Psych. phys. (Fontan—Hystéro-épilepsie masculine : suggestion, inhibition, transposition des sens). Note sur "l'amour du mal". No. 9. L. Dauriac—Le criticisme et les doctrines philosophiques. A. Binet—Le fétichisme, &c. (fin). E. Durkheim—La science, &c. (fin). P. Tannery—La cosmogonie d'Empédocle. Analyses, &c. Soc. de Psych. phys. (Ch. Richet—Actions réflexes psychiques).

La Critique Philosophique (Nouv. Sér.).—An. iii., No. 6. E. Blum—Un sociologiste inconnu : essai sur Ballanche. C. Renouvier—Réponse aux objections de M. Thos. Whittaker contre un système de classification des doctrines philosophiques. F. Pillon—Philosophie de l'histoire grecque. L. Dauriac—Sens commun et raison pratique.

Rivista Italiana di Filosofia.—Vol. ii., Disp. 1. G. Barzellotti—La morale come scienza e come fatto e il suo progresso nella storia. L. Credaro—Il Kantismo in G. D. Romagnosi. A. Valdarnini—Ancora sulla legge suprema dell' educazione. F. Bonatelli—Concorso per le scienze filosofiche. N. Fornelli—Il fondamento morale della pedagogia secondo Herbart e la sua scuola. Bibliografie, &c.

Rivista di Filosofia Scientifica.—Vol. vi., No. 6. E. Regalia—Non "origine" ma una legge negletta dei fenomeni psichici. B. Labanca—Iddio nella filosofia cristiana. F. Puglia—Genesi ed evoluzione dei piu importanti diritti della personalità umana. Riv. Anal., &c.

Zeitschrift für Philosophie, &c.—Bd. xc., Heft 1. J. Volkelt—Psychologische Streitfragen (i.). L. Busse—Beiträge zur Entwicklungsgeschichte Spinoza's (i.). E. Arleth—Ueber Aristoteles' *Eth. Nic.* i. 5, 1097*b*. 16 ff. R. Falckenberg—R. Eucken's *Prolegomena*, &c. Erwiderungen (Steudel gegen Schuppe. Schubert-Soldern gegen Lipps). Recensionen. Heft. 2. C. Gutberlet—Teleologische Streiflichter. G. Simmel—Ueber die Grundfrage des Pessimismus in methodischer Hinsicht. G. Knauer—Reflexion u. Reflexionsbegriffe. Recensionen. Bibliographie, &c. Bd. xci., Heft 1. H. Göring—Sophie Germain, die Vorläuferin Comte's. J. Witte—Logische Forschungen der Gegenwart u. Harms' opus posthumum. G. Cantor—Mitteilungen zur Lehre vom Transfiniten. W. Koppelmann—Romundt's *Grundlegung zur Reform der Philosophie.* Recensionen.

Philosophische Monatshefte.—Bd. xxiii., Heft 9, 10. C. Baeumker—Die Ewigkeit der Welt bei Plato. O. Schneider—Positivismus u. Transcendentalphilosophie. F. Tönnies—Leibniz u. Hobbes. Recensionen. Litteraturbericht. Bibliographie, &c.

Zeitschrift für Völkerpsychologie u. Sprachwissenschaft.—Bd. xvii., Heft 3. H. Steinthal—Begriff der Völkerpsychologie. A. Nagele—Der Schlangen-Cultus. S. Maybaum—Die Zerstörung des Tempels u. des Prophetenhauses zu Silô. O. Kares—Die Formenverhältnisse des Wortschatzes u. die sprachlichen Baustile (ii.). Beurteilung.

Philosophische Studien.—Bd. iv., Heft 3. W. Wundt—Die Empfindung des Lichts u. der Farben. N. Lange—Beiträge zur Theorie der sinnlichen Aufmerksamkeit u. der activen Apperception. R. Glass—Kritisches u. experimentelles über den Zeitsinn. L. Lange—Ein Chronograph nebst Controlapparat für sehr genaue Messungen.

B
1
M65
v.12

Mind

438

PLEASE DO NOT REMOVE
CARDS OR SLIPS FROM THIS POCKET

UNIVERSITY OF TORONTO LIBRARY